Public Document No. 48

The Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

METROPOLITAN DISTRICT COMMISSION

FOR THE YEAR 1935

PUBLICATION OF THIS DOCUMENT APPROVED BY THE COMMISSION ON ADMINISTRATION AND FINANCE

1m-5-36. No. 7789

CONTENTS

REPORT OF THE METROPOLITAN DISTRICT COMMISSION

To the Honorable the Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled.

The Metropolitan District Commissioner has already presented to your Honorable Body an abstract of the account of the receipts, expenditures, disbursements and liabilities of the Metropolitan District Commission for the fiscal year ending on November 30, 1935, and now, in accordance with the provisions of section 100 of chapter 92 of the General Laws, presents a detailed statement of its doings for the calendar year ending on December 31, 1935.

SIXTEENTH ANNUAL REPORT

I. Organization and Administration

COMMISSION, OFFICERS AND EMPLOYEES

Joseph A. Rourke was appointed Associate Commissioner December 4, 1935 in place of Joseph B. Jacobs, whose term of office expired November 30, 1935. The Commission with this exception remains the same as in the previous year: Eugene C. Hultman, Commissioner, William F. Rogers, Melvin B. Breath, Felix A. Marcella and Joseph A. Rourke, Associate Commissioners.

William E. Whittaker has continued as Secretary of the Commission, William E. Foss as Director and Chief Engineer of the Water Division, Benjamin R. Davis as Director and Chief Engineer of Park Engineering and Joseph P. Dever, who was appointed January 3, 1935 as Director and Chief Engineer of the Sewer Division.

The total number of permanent positions as of November 30, 1935 and the number of temporary employees during the year is divided as follows:

	Administration	*Parks Division*	*Sewerage Division*	*Water Division*	*Total*
Permanent	44	678	220	369	1,311
Temporary	23	758	228	128	1,137
	67	1,436	448	497	2,448

II. General Financial Statement

Year ending November 30, 1935

Expended for construction	$1,070,841.27
Expenditures, miscellaneous	12,663.98
Expenditures for maintenance	3,886,435.98
Total expenditures	4,969,941.23
Unexpended balance, maintenance appropriations	418,038.10
Serial bonds and notes issued	105,000.00
Sinking fund bonds paid	13,839,000.00
Serial bonds and notes paid	517,248.27
Decrease in sinking fund	11,508,658.34
Decrease in net debt	2,742,589.93

On November 30, 1935

Net debt	$18,292,821.88

III. Parks Division—Construction

Wellington Bridge

The Mystic River Bridge and the Mystic Valley Parkway between the Middlesex Fells Parkway and Mystic Avenue, Medford, which was started in 1934, were completed and opened to the public. Due to the reconstruction of the Wellington Bridge over the Mystic River, it was necessary to restrict this new link of the Mystic Valley Parkway to one-way travel. The new trunnion type steel drawbridge is a Public Works Administration project, and is being constructed under the authorization of Chapter 365 of the Acts of 1933. The easterly half of the bridge was opened to traffic October 19, 1935.

Nonantum Road

As authorized under the Charles River Basin Act, the construction of the extension of Nonantum Road from the junction of Water Street to Galen Street, Water-

town, was completed and opened to the public, thus practically completing a drive along the Charles River from Bay State Road, Boston, to Galen Street, Watertown.

Chickatawbut Road

Chapter 383 of the Acts of 1935 directed the building of a roadway from the junction of Chickatawbut and Wampatuck Roads, Quincy, in the Blue Hills Reservation to Granite Street, Braintree. This road was completed and opened to the public with ceremonies attended by public officials in November, 1935.

Havey Beach and Bathhouse

Under Chapter 332 of the Acts of 1934, the Commission constructed a beach and bathhouse on the westerly shore of the Charles River in the West Roxbury District of Boston, which was opened to public use in August, 1935.

Garage

A reinforced concrete and brick garage was constructed as an addition to the Lower Lock Gate House on the Charles River Dam, to be used for housing police patrol cars and the new patrol wagon which has been purchased for the Charles River Lower Basin Division.

Nahant Beach Playground

Under Chapter 493 of the Acts of 1935 the work of reconstructing and improving the recreation grounds at the Nahant Beach Reservation, between the Traffic Road and Lynn Harbor in the rear of the Bath House, was authorized. This work will not be completed until the spring of 1936. The improvements include the building of tennis courts with asphalt surfaces, grading baseball diamonds and volley ball courts and the installation of playground apparatus in the children's playground on the beach front.

Reconstruction of Parkways and Boulevards

The following boulevards and parkways were reconstructed or resurfaced during the year, with some changes in grade and alignments:

Unquity Road northerly from Hillside Street, Milton, was regraded, widened, realigned, and resurfaced with bituminous penetration macadam.

Unquity Road for 3,400 feet southerly from Canton Avenue, Milton, was regraded, widened and resurfaced with bituminous penetration macadam.

Charles River Road from Station 26 + 65 to Beacon Square, Watertown, was widened, edgestone set, and the roadway surfaced with a rough coat on a bituminous penetration base.

Fellsway East from Fellsway West to Pleasant Street, Malden, easterly roadway was widened, edgestone set, and the roadway surfaced with a rough coat on a bituminous penetration base.

Fellsway East from Pleasant Street to Savin Street, Malden, was regraded, widened, edgestone set, and roadway surfaced with a rough coat on a bituminous penetration base.

Bear Hill Entrance, Middlesex Fells Reservation, from Marble Street to Main Street, Stoneham, was reconstructed, widened, regraded, edgestone set, and roadway surfaced with bituminous penetration macadam.

Mystic Valley Parkway from Auburn Street to Main Street, Medford, is being reconstructed, edgestone set, and roadway surfaced with a rough coat on a bituminous penetration base.

Old Colony Parkway at Victory Road, Pattens Cove, Conley Street, and Tolman Street, was regraded and resurfaced with bituminous penetration macadam.

A portion of Lynnway, Revere, was reconstructed, widened, edgestone set, and roadway surfaced with bituminous penetration macadam.

Bridge Repairs

General repairs were made to the following drawbridges:

Malden River Bridge, Revere Beach Parkway.

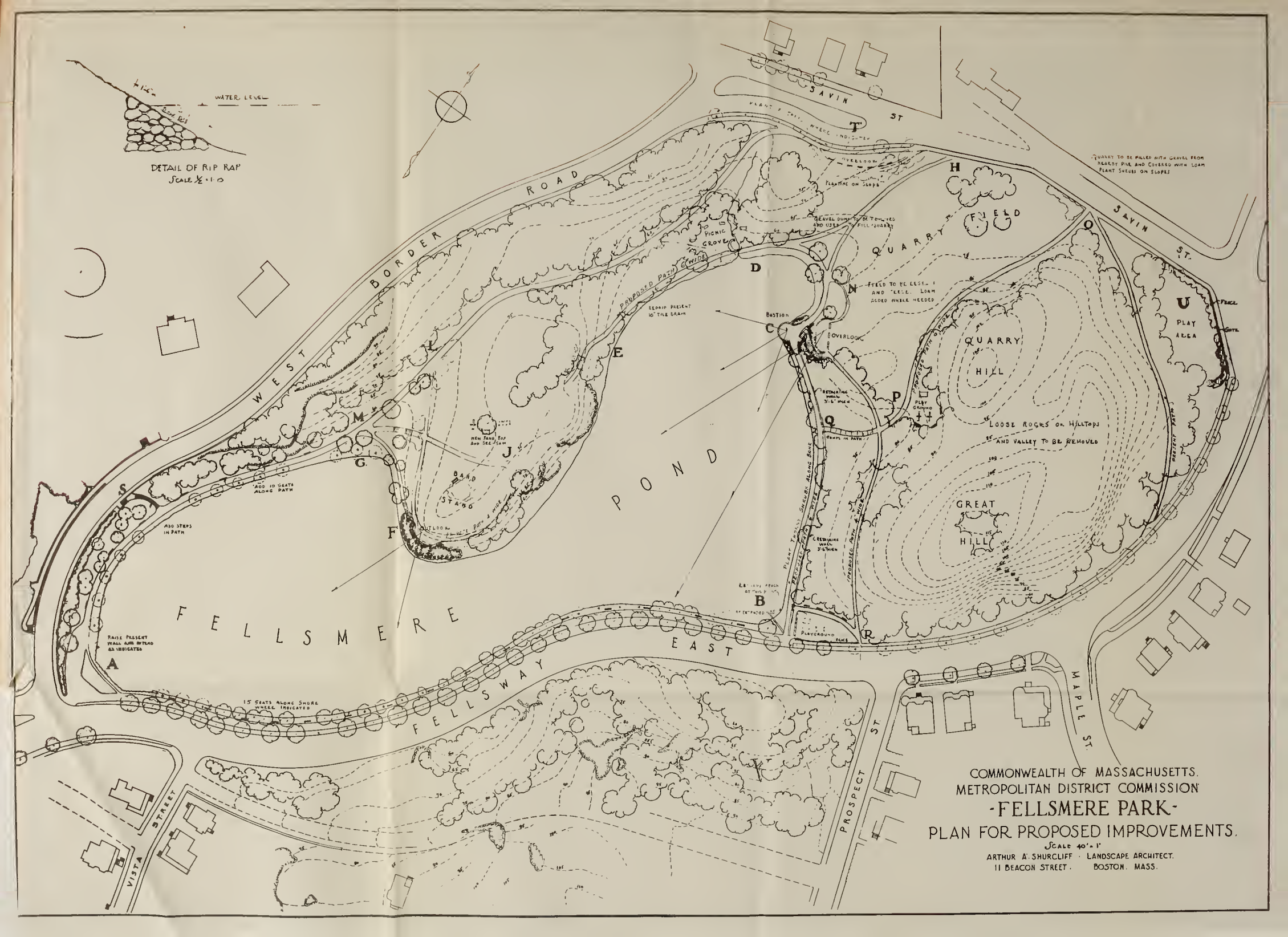
Dorchester Bay Bridge and Neponset Bridge, Old Colony Parkway.

Harvard Bridge — paving repairs were made.

Saugus River Bridge, Lynnway, was kept in repair until September, 1935, at

Charles River Before Improvements Were Made

Charles River Basin After Completing Improvements



COMMONWEALTH OF MASSACHUSETTS.
METROPOLITAN DISTRICT COMMISSION

-FELLSMERE PARK-

PLAN FOR PROPOSED IMPROVEMENTS.

SCALE 40'= 1'

ARTHUR A. SHURCLIFF · LANDSCAPE ARCHITECT.
11 BEACON STREET. BOSTON. MASS.

which time the new General Edwards Bridge was available. Stringers were reinforced, additional bracing installed, and roadway planking kept in repair.

Wellington Bridge, Middlesex Fells Parkway, was kept in repair during the construction of the new bridge. Stringers were reinforced and the roadway surface kept in repair.

Contracts were let for reflooring one leaf of the draw and repairing racks at the Charles River Dam, the flooring to be of the open grating type to reduce the maintenance cost and to lighten the draw. This work is now in progress.

A contract was let for electrical installation of brakes and other electrical replacements at the Charles River lock and draw. The work is now in progress.

As the old windows in the tower of the draw house were in a dangerous condition, new windows were installed.

Repairs were made to pumps, to boiler flue, and to the filling gates.

Ice Breaking in Charles River Lower Basin

The work of breaking ice in the channels of the Charles River Basin below Longfellow Bridge and in the Broad and Lechmere Canals, as required by the Federal Government, was done.

Traffic Control Signals

A contract was awarded for traffic control signals, signs and lines at Neponset Bridge and Charles River Dam. Traffic control signals were also installed at the intersection of Vine Street and Revere Beach Parkway, Everett.

One hundred and sixty-six permits were issued for driveway entrances and miscellaneous purposes, and fifty-one orders concerning restrictions were issued by the Parks Division engineering department. This department supervises all construction work, including general repairs to buildings and structures, driveway entrances to parkways and boulevards, and also has charge of the maintenance and operation of the various drawbridges and locks.

IV. Maintenance of Parks and Reservations

The usual work of maintenance of the parkways and boulevards and the reservations has continued during the year.

Revere Beach Division

The cleaning of walks, gutters and roadways, the removal of debris strewn upon the beaches by the tides, and the picking up of rubbish left by visitors presents a formidable problem during the summer months in keeping the reservation in an attractive looking condition. A considerable amount of repairs were necessary at Winthrop, Revere, Lynn and Nahant Beaches because of storm damage. A concrete wall 900 feet long and 4 feet deep was constructed by the division labor force to protect the Northern Circle at Point of Pines, Revere. The entire parking space which accommodates 840 cars, between Revere Street and Point of Pines, was resurfaced with 1,000 tons of bituminous concrete. The old wooden bulkhead between the bath house and Revere Street, consisting of 700 old wooden posts, was removed. A 7-foot sidewalk along the northerly side of the Revere Beach Parkway, between Everett Avenue and Second Street, Everett, was graded and surfaced with bituminous concrete, and on the southerly side between Vine Street and Second Street, a 6-foot sidewalk was constructed with the same material.

Middlesex Fells Division

About five miles of bridle paths in the Lawrence Woods, Bear Hill and Whip Hill sections of the reservation were built to a width of 12 feet, with the necessary drains. These paths have long been needed to facilitate the fighting of brush fires in these sections. A project to landscape and beautify Fellsmere Park around Fellsmere Pond in Malden was started, and will be completed in the spring of 1936. Almost the entire area has been levelled, graded and landscaped in accordance with a plan submitted herewith, prepared by Mr. Arthur A. Shurcliff, Landscape Consultant for the Commission. About 4,000 feet of retaining wall has been built; 500 square yards of bituminous walks have been completed; 400 square feet of steps and ramps have been built; 5,000 square feet of walks have been filled and levelled; old drains

have been repaired and new drains built where needed; about 900 tons of granite rip-rap is being set along the shores of the pond. Unsightly areas contiguous to the shores of the Mystic River between Boston Avenue in Somerville and Medford and High Street in Arlington have been filled, graded and planted to grass, and a 6-foot gravel path, 4,500 feet in length, with a rolled stone dust surface, has been constructed. Similar improvements were accomplished along the south bank of Alewife Brook from Massachusetts Avenue, Cambridge, to the railroad bridge. In this area, a 6-foot gravel foot path 1,700 feet long was constructed. A ball field 600 feet long and 260 feet wide was levelled and graded near Harvard Avenue, Medford. The bank of the Mystic River has been graded, sloped and sodded over an area of 15,000 square feet, and about 100 feet of the bank rip-rapped with stone. Some work still remains to be finished in the spring which will put this area in excellent condition and make it more acceptable for use by the public. General repairs to the buildings and observation towers have been made. The nursery which is maintained for the propagation and care of trees and shrubs suitable for roadside planting and other landscaping in the various divisions, has been cared for by experienced employees. Food crops have been raised on the farm for the zoo and stable. Various drains and catch basins have been built along the several parkways and existing drains and basins have been cleaned and repaired. About two and one-half miles of police signal service cable was laid along the Mystic Valley Parkway, Medford. A section of the Winthrop Street Playground was levelled and rolled for use by cricket enthusiasts. The band stand on Manchester Field, Winchester, was repaired and painted. The forestry division has supervised the tree trimming and topping, and the clearing of the reservation of undergrowth and dead trees. Considerable spraying and creosote work was necessary on account of an over abundance of all kinds of insect pests, gypsy moths, forest tent caterpillars, Eastern tent caterpillars, canker worms and the spittle bug, together with an immense flight of satin moths which struck into the poplars on the Fellsway. About 200 acres of inside woodland within the Middlesex Fells, where heavy infestations or defoliation was evident, were thoroughly sprayed. About 15,000 white pine, 3,000 white spruce and 6,500 small hemlocks were planted during the year in the Fells. The attendance at the Middlesex Fells Zoo nearly doubled the past year, and on any one Sunday during the spring or fall the average would be 10,000. This popular attraction for both children and adults contains a wide variety of animals, birds and fowl, which are exhibited free of charge.

Charles River Lower Basin Division

About 40 new trees and 2,000 new shrubs were planted on the new enbankment area. The comfort stations were painted and plumbing repaired. The patrol of the river and the removing of driftwood and refuse from the shores was attended to. Life saving apparatus consisting of a ladder, rope, lifebuoy and lifeboat, were placed at proper intervals along the Embankment and kept in good condition for instant use. The seven shelters were reshingled and painted.

The past season has seen the completion of the planting of the new embankments of the Charles River Basin and the operation of the outdoor concerts in the special ampitheater arranged on the reclaimed ground. The extensive improvements between the Longfellow Bridge and the Cottage Farm Bridge have opened the margins of the Basin as never before to many thousands of park visitors who could not be accommodated near the Basin previously for want of suitable facilities along the shore. The boat haven, protected by its breakwater, has given an impetus to rowing, and the use of shells and other light craft has been made possible even in windy weather by the slope of the new shores which has abated the nuisance of "topple waves." Crews which could not heretofore enter the Basin from the upper waters above the Cottage Farm Bridge are seen constantly now during the summer season in the Basin itself, and active plans are on foot for the establishment of new boat houses.

The lagoon opposite Fairfield and Gloucester Streets has been used extensively for sailing of model boats. It has proven an exceptionally popular place for skating. An ice carnival held in February, 1935, drew a large crowd of skating enthusiasts. Through the generous cooperation of the City of Newton, equipment was furnished to put the ice in acceptable condition. A tractor, ice planer and snow scraper

COMMONWEALTH OF MASSACHUSETTS

METROPOLITAN DISTRICT COMMISSION

DAVIS B KENISTON, COMMISSIONER

ASSOCIATE COMMISSIONERS

FRANK A DAYER WM F ROGERS

GEO D WASON C H J KIMBALL

WM E WHITTAKER, SECRETARY

E H ROGERS - DIRECTOR OF PARK ENGINEERING

CHARLES RIVER BASIN GENERAL PLAN

SCALE OF FEET

100 0 100 200 300 400 500 1000 1500

ARTHUR A SHURCLIFF LANDSCAPE ARCHITECT

11 BEACON STREET - BOSTON, MASS

IN CONSULTATION WITH MESSRS PUTNAM AND COX — ARCHITECTS

JUNE, 1931

REVISED TO JAN 1932

REVISED TO APRIL 1932

recently purchased by the Commission will simplify the problem of conditioning the surface for a maximum amount of seasonal use. These local facilities are being constantly increased as public accommodation requires. Renewed interest is showing itself in the sailing of small boats, especially by students of the Institute of Technology who are proposing to erect a boat house for such craft on the Cambridge shore. A boat house for row boats and other oared craft is contemplated above the Cottage Farm Bridge. All these developments have awakened widespread public interest among the Garden Clubs, the rowing and sailing groups, and many other groups and organizations interested in water sports and recreation facilities which are appropriate to this great Metropolitan Park for whose development the State is especially indebted to Mrs. James J. Storrow who contributed a million dollars toward the improvements in memory of her husband, the late James J. Storrow. Mr. Storrow took active part in the first improvements of the Basin and these improvements e iminated the tidal flow and the unsightly conditions which formerly surrounded this water area rendering it unsuitable for public enjoyment. Through his activities and the groups which were associated with him, the dam was constructed and initial improvements were made to open the Basin to fuller recreative opportunities and to meet the needs of a very large population.

Six permits were granted to operate pleasure boats for hire on the Charles River Basin. These boats furnish delightful water trips which are enjoyed by a large number of people.

Anchorage buoys on the Basin were repaired and painted and put out during the boating season. Over 600 new shrubs and 60 new trees were planted along the Memorial Drive and Fresh Pond Parkway.

Considerable work was done on the undeveloped section of the reservation back of the Mt. Auburn Cemetery, including the planting of 7,000 yards of filling. Drains were cleared and, where necessary, were treated with oil for mosquito control and pollution. The riverbank was loamed and seeded where needed, and considerable rip-rap was reset to grade. In cooperation with the Federal Housing Commission, the Commission granted permission for the erection of three model homes on the lot at the corner of Brookline Street and Memorial Drive, Cambridge, which were inspected by large crowds each day.

Bunker Hill Monument

The Bunker Hill Monument and grounds were kept in good condition. Plumbing was overhauled; the fence around the grounds repaired, settees repaired and painted, and the paths reconditioned. The number of persons who ascended the monument during the past year was 33,582.

Charles River Upper Division

Large quantities of fill were received from various sources, without charge, which was used to fill in the low area east of the Speedway track on Soldiers Field Road. Well attended matinees and horse shows were held by the Metropolitan Driving Club during the spring, fall and winter on the Speedway track, which was kept in good condition by the division forces. No admission charge is made to witness the horse show or races held at this track. Soldiers Field Road was repaired and resurfaced opposite the Boston & Albany water tower.

The banks of the Charles River were loamed, set out with shrubs, graded and riprapped at various locations; tree pits were also reloamed. 1,650 feet of pipe was laid, and connection installed for water in the Faneuil bath house. A shower head and bubbler fountain were set up in the bath house by the division forces. New swings and teeter boards were erected at the Speedway playground. The headquarters buildings were repaired and painted, and the band stand on the Upper Charles River Road was repaired, painted and electric lights installed. A new sanitary building, 12 feet by 18 feet, was erected at Forest Grove, of sightly wooden construction. This grove was cleared of sprout growth and the roadway was patched. Hemlock Gorge Reservation was cleared of sprout growth and dead trees, and the area replanted. The area adjoining Nonantum Road was loamed, graded, seeded and set out with shrubs, and about 5,000 feet of curbing along the road was painted white along the river side as a safety measure. One hundred Lombardy poplars and sixty maple trees were set out along Soldiers Field Road Extension.

Riverside Recreation Grounds

The Riverside Recreation Grounds were used extensively for picnic parties during the past year; the running track was covered with cinders and rolled; baseball diamond was loamed, levelled and rolled; tennis courts were resurfaced and kept in condition. The large float along the old canoe house was removed and replaced with a smaller but more substantial float. The swimming pool was deepened, a new diving board was erected and a new engine and pump were installed.

At the junction of the Hammond Pond Parkway with the Worcester Turnpike, the two islands have been graded, loamed, seeded and dwarf shrubs have been set out by the division forces. The corners of this parkway at Beacon Street, Brookline, have also been landscaped. The Hammond Pond Reservation has received proper attention in the building of fire breaks, cutting of underbrush and the removing of dead and worthless trees. The Norumbega Tower in the Charles River Reservation in Weston was repointed, the stone tablet re-cut, new bronze tablet erected, and other improvements made to put this historic tower in good condition. The landscaping around this tower will be completed in the spring.

Blue Hills Division

A swamp near the Headquarters Building was reclaimed, using 3,500 cubic yards of fill taken from the reservation. 15,000 cubic yards of fill was relocated to reclaim and grade about 75 acres of swamp land adjacent to Ponkapoag Brook in the golf course section. The parking space on the east side of Hoosicwhisick Pond was improved and enlarged. Bridle paths have been constructed, and water pipes have been relaid to the various buildings near the headquarters. 4,000 gallons of dust-laying oil was applied to the various parking spaces. About 2,800 small trees: spruce, pine and hemlock were received from Amherst College, and set out in the nursery near the headquarters. 3,500 three-year old trees were taken from this nursery and set out in various places in the reservations, together with 40 maple and 35 catalpa trees from 12 feet to 14 feet in height. About 1,052 lbs. of Arsenate of lead was used in combatting insects, etc., throughout the reservation. In the Neponset River Reservation a baseball field and playground were constructed at Vose's Grove, off Ventura Street in Dorchester; 20,000 cubic yards of fill, 900 cubic yards of loam and 540 cubic yards of stone were used in this development.

To correct the danger of entering the parking space on the Quincy Shore Reservation between Black Creek Bridge and Sachem Street over an edgestone, 100 tons of bituminous material was used to raise the grade of the street. Other parking spaces damaged by high tides have been regraded and improved.

80 Schweidler maple trees, 12 feet in height, have been set out in anticipation of replacing silver poplars that are decaying. About 18 miles of service roads have been built in the Stony Brook Reservation, including a road around Turtle Pond. A dangerous bank at the junction of Dedham and Turtle Pond Parkways has been removed to increase the visibility of the motorist. Considerable work has been done at Spring Street, Dedham, including grading and planting of 175 bushes. The old Riverside Boat House, on the Dedham side of the Charles River, has been razed and the location filled in and graded.

The Blue Hills Parkway has been made a one-way street the entire length. A cross walk was constructed in front of the public library, and the grassed area between the roadways has been grubbed and graded. An emergency water hole on the east side of the Dedham Parkway has been enlarged and the capacity increased from 6,000 to 12,000 gallons of water. About 25 acres adjoining this parkway has been cleared of dead wood and underbrush.

Improvement has been made along the Furnace Brook Parkway, grading and planting trees. Along the Neponset Valley Parkway trees have been replaced in the vicinity of Paul's Bridge. Considerable work was done along the Old Colony Parkway, rebuilding sidewalks, grading and improving both sides of the parkway. 25,000 cubic yards of fill, secured without expense to the district, was used to put the area between Columbia Circle to Freeport Street in good condition. 12,280 cubic yards of fill was used to grade a low area between the Dorchester Bay Bridge and the Savin Hill Yacht Club.

The crowds of visitors whose parked motors clog the Old Colony Parkway in the vicinity of Savin Hill indicate the popularity of the nearby shores for bathing

Crowd Attending St. Moritz Winter Carnival

Ski Run on the Westerly Side of Blue Hill

COMMONWEALTH OF MASSACHUSETTS

METROPOLITAN DISTRICT COMMISSION

BLUE HILLS RESERVATION

PROPOSED MOTOR ROAD AND PARKING SPACE ON GREAT BLUE HILL

100 0 1 2 3 4 5 6 7 8 9 1000 FT.

ARTHUR A SHURCLIFF · LANDSCAPE ARCHITECT
11 BEACON ST. BOSTON MASS

PRESENT ROADS

FEB 1936

BLUE HILL AVE.

CANTON AVE.

GREEN ST.

5-15 YR GROWTH

CULTIVATED FIELD

WOLCOTT PINES

10-30 YR OAK & CHEST.

15-30 YR OAK & CHEST.

30 YR CHESTNUT

30 YR MA

BATTER

10-20 YR OAK & CHEST.

MOTOR ROAD DOWN

WATER TANK

OAK SHOOTS 2-3 YRS

45 YR PINE

BIRCH

PINE

NEW FOOT TRAIL

5-20 YR MIXED GROWTH

30 YR PINE

FIELD

BLUE HILL AVENUE

5-20 YR

SCRUB OAK 4-7'

15 YR OAK & CHESTNUT

15-30 YR

10-25 YR CHESTNUT

30 YR OAK

MOTOR PARKING SPACE

NEW SKI TRAILS

MILTON CANTON

CANTON PASS

10 YR HICKORY

SCRUB OAK

GREAT BLUE HILL OBSERVATORY

10 YR OAK & BIRCH

12 YR HICKORY

OAK BUSH

SHADOW POINT

COMMONWEALTH OF MASSACHUSETTS

METROPOLITAN DISTRICT COMMISSION

BLUE HILLS RESERVATION

PROPOSED MOTOR ROAD AND PARKING SPACE ON GREAT BLUE HILL

100 0 1 2 3 4 5 6 7 8 9 1000 FT.

ARTHUR A SHURCLIFF · LANDSCAPE ARCHITECT
11 BEACON ST · BOSTON MASS

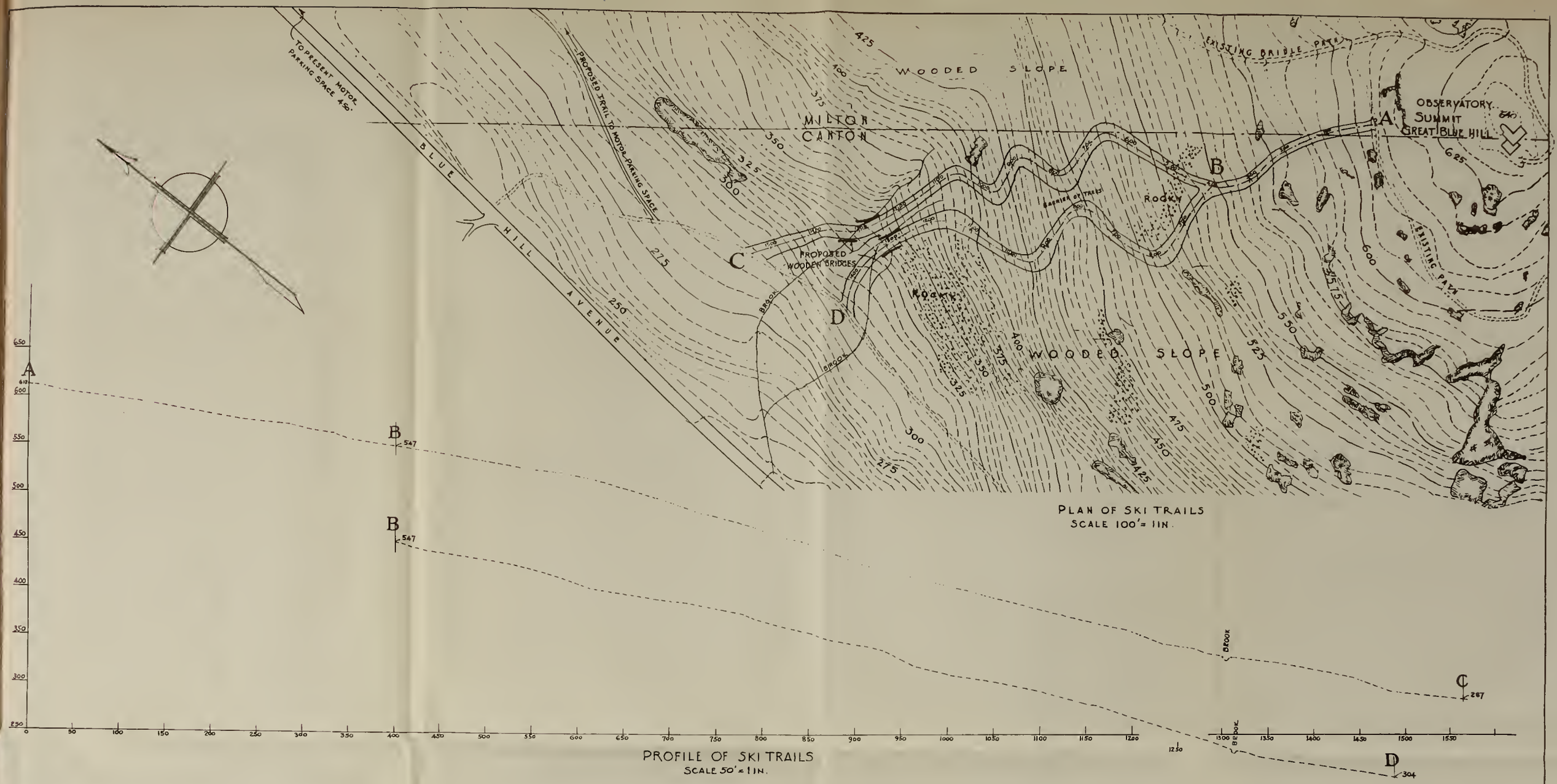
PRESENT ROADS
FEB. 1936

BLUE HILL AVE.
CANTON AVE
5-15 YR GROWTH
GREEN
10-30 YR. OAK & CHEST.
WOLCOTT PINES
CULTIVATED FIELD
30 YR CHESTNUT
30 YR MAP
BRAINTREE
15-30 YR OAK & CHEST.
10-20 YR OAK & CHEST.
MOTOR ROAD DOWN
WATER TANK
OAK SHOOTS 2-3 YRS
5-20 YR MIXED GROWTH
45 YR PINE
BIRCH
PINE
NEW FOOT TRAIL
30 YR PINE
FIELD
NEW FOOT TRAIL
5-20 YR
SCRUB OAK 4'-7'
15-30 YR
15 YR OAK & CHESTNUT
BLUE HILL AVENUE
10-25 YR CHESTNUT
BRAINTREE


MOTOR ROAD UP
MOTOR ROAD DOWN
WATER TANK
5-20 YR MIXED GROWTH
OAK SHOOTS 2-3 YRS
45 YR PINE
BIRCH
PINE
NEW FOOT TRAIL
FIELD
NEW FOOT TRAIL
5-20 YR
30 YR PINE
SCRUB OAK 4'-7'
15-30 YR
15 YR OAK & CHESTNUT
BLUE HILL
10-25 YR CHESTNUT
30 YR OAK
MOTOR PARKING SPACE
PROPOSED SHELTER
NEW SKI TRAILS
MILTON CANTON
CANTON PASS
10-25 YR CHESTNUT
10 YR HICKORY
SCRUB OAK
GREAT BLUE HILL
OBSERVATORY
10 YR OAK & BIRCH
12 YR HICKORY
HICKORY
OAK BUSH
SHADOW POINT
12 YR HICKORY

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT COMMISSION
BLUE HILLS RESERVATION
ENTRANCE TO PROPOSED MOTOR ROAD ON GREAT BLUE HILL

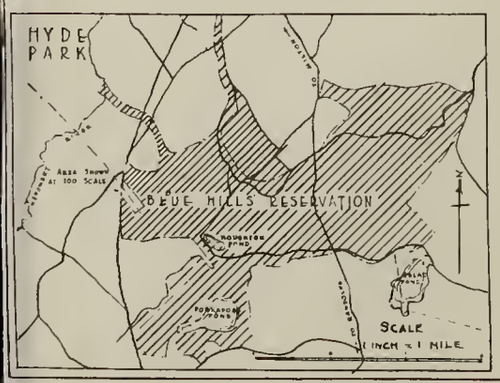
ARTHUR A. SHURCLIFF- LANDSCAPE ARCHITECT



PLAN OF SKI TRAILS
SCALE 100'= 1 IN.

PROFILE OF SKI TRAILS
SCALE 50' = 1 IN.

SECTION	LENGTH	TOTAL FALL	AVERAGE GRADE	MAXIMUM GRADE AT ONE POINT	LENGTH OF MAXIMUM GRADE
A-B	400'	65'	16.2%	34.5%	20'
B-C	1165'	260'	22.4%	40.5%	40'
B-D	1088'	257	23.6%	51.5%	30'



DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
AND
COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT COMMISSION
COOPERATING
BRANCH OF PLANNING — STATE PARK DIVISION

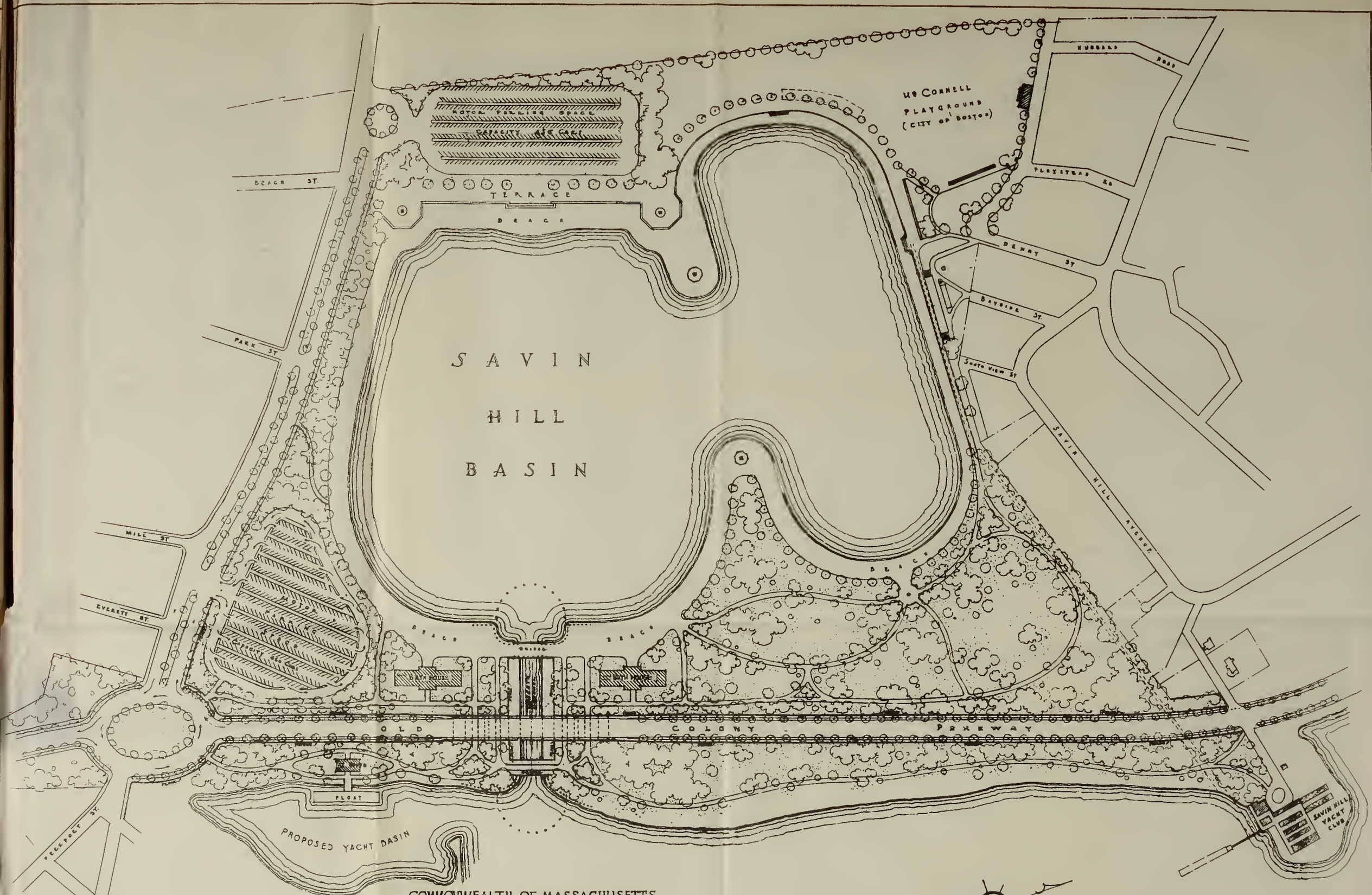
DRAWN BY: ASTRUP & SHURCLIFF LANDSCAPE ARCHITECTS
CHECKED BY:

BLUE HILLS RESERVATION
S.P.I.
PROPOSED SKI TRAILS
ON GREAT BLUE HILL.
SCALES NOTED.

SYMBOL
NUMBER
DATE

RECOMENDED BY — DATE
P.S.
R.I.

APPROVED BY — DATE
S.P.A.
R.O.



COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT COMMISSION

SAVIN HILL BASIN

ULTIMATE DEVELOPMENT

PLAN SHOWING ARRANGEMENT OF BEACHES, BATH HOUSES, APPROACHES, PATHS AND PARKING SPACES.

SCALE OF FEET

ARTHUR A. SHURTLEFF
LANDSCAPE ARCHITECT
11 BEACON STREET
BOSTON, MASS.

MASSACHUSETTS BAY

POINT ALLERTON

GREAT HILL

HOG ISLAND

TELEGRAPH HILL

PEMBERTON POINT

BUMKIN ISLAND

NANTASKET BEACH

OVERLOOK

ATLANTIC HILL

STEAMBOAT LANDING

NANTASKET BEACH RAILROAD

WOOD END

WORLDS END.

COMMONWEALTH OF MASSACHUSETTS.
METROPOLITAN DISTRICT COMMISSION.
PARKS DIVISION.

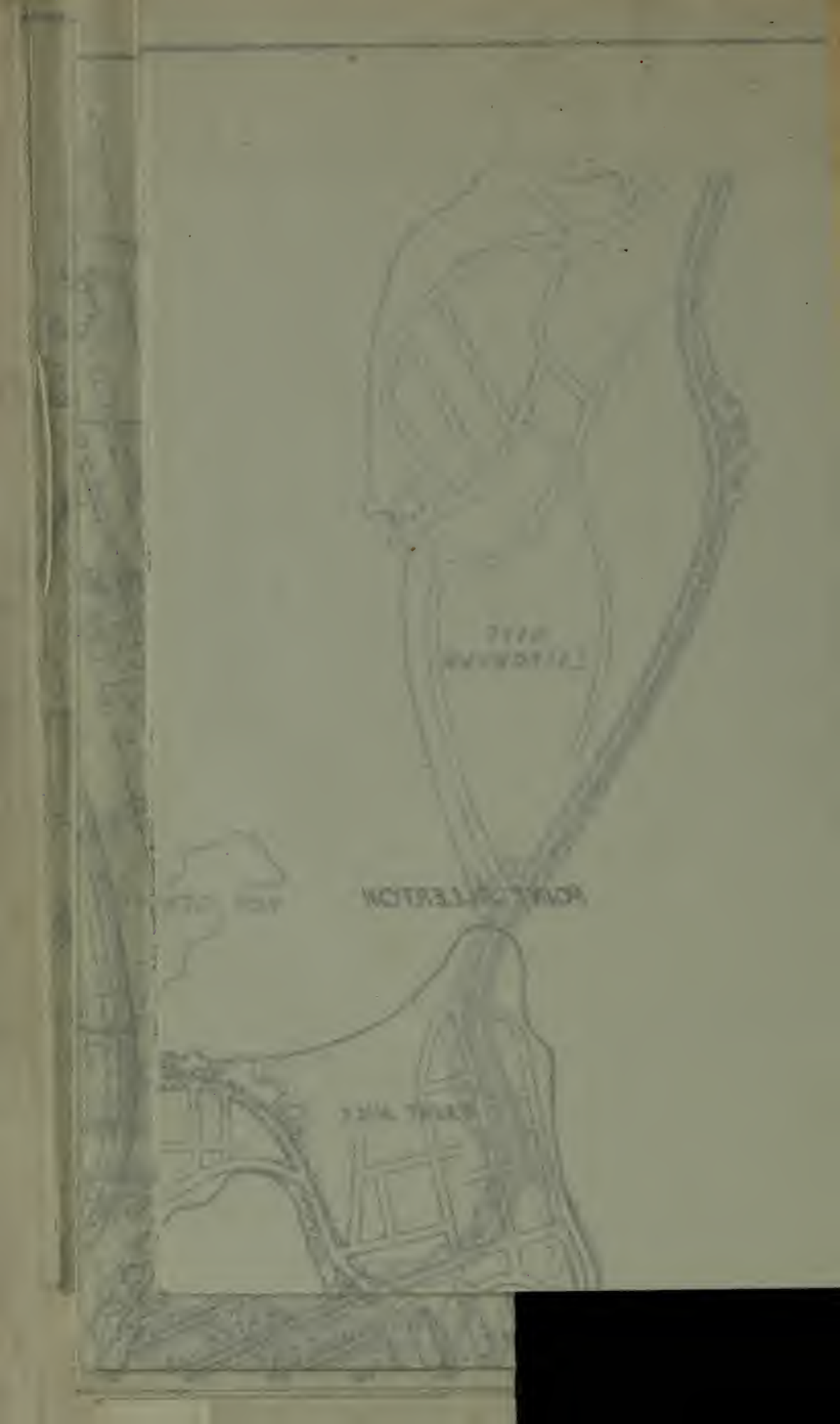
SKETCH PLAN FOR NANTASKET BEACH RESERVATION.

SCALE OF FEET

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 1 MILE.

ARTHUR. A. SHURCLIFF LANDSCAPE ARCHITECT.
11 BEACON ST. BOSTON MASS.

JAN. 30, 1935.
REVISED TO FEBRUARY - 1936.



purposes during the summer. Although no parking facilities and no bathhouse accommodations have been provided, these shores are becoming more and more popular. The water inside the Old Co ony Bridge, that is to say in the Savin Hill Basin, fluctuates with the tide and can be used for bathing purposes only within a few hours of high tide. At middle or low tide, the water is too shallow. Within a year or two a new marginal sewer has been built which protects this inner water area from contamination. A proposal to arrange tide gates to make a tidal basin at this place appears to be entirely practical and would enable the public to avail itself of bathing facilities in this Savin Hill Basin at all tides, but there would be a sufficient circulation of water arranged by gates or weirs to freshen this water at each change of tide.

In arranging bathing facilities for this Savin Hill region, the appended plan shows the development of this tidal basin with bathhouses, beaches, parking spaces, shade trees and promenades. If the bathhouse is placed near the present bridge, the most northerly archway of that bridge can be used for a pedestrian underpass and consequently permit the use of the outer beach for bathing purposes, without requiring visitors to cross the motor road at grade. This plan shows a traffic circle at the Freeport Street intersection This circle would serve a secondary purpose to enable motors to enter the proposed parking space without conflict with the general motor travel of the parkway. By arranging fences on each side of the parkway, no cross-cutting from the east shore to the west shore could take place and all danger to pedestrians and to motors would be forestalled.

This proposal for the development of the inner beach owned by the State would also assist the development and use of the inner beach owned by the City of Boston. Evidently the success of the design would depend upon the creation of a new yacht haven exterior to the basin, and the plan provides for this, and would give the public approximately 1¼ miles of beach (not including one-third of a mile subject to tidal action on the east side of the parkway). This development would make this one of the most commodious bathing places in the neighborhood of Boston, in fact equalling the bathing shore frontage of Columbus Park and amounting to approximately one-third of that great shore frontage at Revere Beach.

Tidal basins of this kind are becoming popular in our country and excellent equipments have been installed in the parks near New York, in Florida, and in other cities along the Coast. It is a practical and safe method of accommodating large crowds with a minimum amount of superintendence and with least cost for upkeep. It is to be hoped that moneys can be made available for the development of a program of this kind which would meet the needs of such a large population. A picture of the crowd using this undeveloped area, together with a proposed development is submitted herewith.

A parking space 400 feet by 60 feet on the west side of the Veterans of Foreign Wars Parkway, West Roxbury, was constructed for the use of those desiring to use the bath house and beach. 40 pin oak trees were replaced and 125 bushes were set out on this parkway. A portion of the roadway near the railroad bridge which had settled, was graded and resurfaced. Several sections of the West Roxbury Parkway were reconditioned with fill and loam, and about 350 shrubs and trees were replaced.

Winter Sports — Blue Hills Reservation

Large crowds enjoy the facilities provided in the Blue Hills for winter sports. The so-called St. Moritz ice carnival held each year has grown to be one of the most popular outdoor winter events in New England. About 35,000 people attended the various exhibitions which included ice racing, fancy skating, skiing and tobogganing. Excellent ski runs have been provided on the westerly side of the Blue Hills which attracted large crowds who enjoy this type of sport. Topographically this reservation lends itself to a greater use for enjoying these outdoor activities which should be developed to a greater extent.

NANTASKET BEACH RESERVATION

The Nantasket Hotel and Cafe was kept in good repair. Roofs were repaired, conductors replaced, new plumbing installed, hotel office, toilets and rooms on the second floor painted, lobby floor varnished, piazza floors repaired, roof of the pavilion raised, and the band stand remodelled. This hotel was let as a concession during the

season of 1935 for the sum of $10,000. A new heating system was installed in the police station, together with a new toilet and wash bowl. The various sanitaries and other buildings were repaired and painted. The parking areas were graded, enlarged and treated with oil. 6,500 square yards of bituminous macadam surface was laid in a portion of the parking area.

Systematic improvements are needed in the Nantasket Beach section to eliminate the crude appearance of the parking space and the piecemeal development of the waterfront. The waterfront should be unified by an extension of the board walk or equivalent promenades to the extreme southerly end of the beach where the most attractive views are to be had of the great four-mile curve of the strand. Shade tree planting is needed of kinds which will resist the wind. The present pleasure road, which comes to an end soon after passing the police station, should be extended to the beach, as shown on the accompanying plan, and carried north at least as far as the oval, where a temporary terminal and loop for motors should be provided. The estimated cost of this work, including land, would be about $250,000.00.

The need for an orderly development of the interrupted shore line of the great northerly portion of the beach is apparent. Present conditions also interfere with the best development of the shore front property and the best use of the cottage areas on both sides of the peninsula. The scars of the abandoned railway track on the headlands mutilate the waterfront. Evidently the most satisfactory way to meet the above needs is to provide a shore boulevard of the type which the State has been building under similar conditions along the waterfront of the Metropolitan District. Conditions favor the construction of such a boulevard, both topographically and because of the public ownership of a large part of the frontage. The unified ownership of the remaining frontage by the railroad, whose tracks are now abandoned, simplifies the program shown on the accompanying plan. A loop would be provided in the neighborhood of the site of the old Hotel Pemberton. Footways, shore planting, overlooks, parking spaces, should be provided where needed. Low sea walls and rip-rap will be needed at some of the headlands to protect the shore from being undermined by the wave action. The cost of carrying out these improvements in the northerly section, not including land, is estimated at about $800,000.00.

If the above projects were carried out, as shown on plan, the total length of the developed waterfront would be approximately five miles and would make one of the most attractive scenic roads of the country.

Miscellaneous

Surface treatment was applied to the various parkways by division forces as follows:

Revere Beach Parkway, between Everett Avenue and Second Street, Everett.
Alewife Brook Parkway, between Massachusetts Avenue and Concord Avenue, Cambridge.
Fellsway West (outbound) between Elm Street and Roosevelt Circle, Medford.
Fellsway West (outbound) between Salem Street and Cherry Street, Medford.
Fellsway near Mystic Avenue, Somerville.
West Border Road, Middlesex Fells Reservation, Medford.
Murray Hill Road, Middlesex Fells Reservation, Medford.
Hillcrest Parkway, Middlesex Fells Reservation, Winchester.
Fresh Pond Parkway, Cambridge.
Blue Hill River Road, Blue Hills Reservation, Milton.
Blue Hills Parkway, Milton.

Bath Houses

The Commission maintains bath houses at the following locations:

Nantasket Beach
Revere Beach
Nahant Beach, Nahant
Magazine Beach, Cambridge
Hoosicwhisick Pond, Blue Hills
Veterans of Foreign Wars Parkway, Havey's Beach
Mystic River at Foster's Court, Medford
Upper Mystic Lake, Sandy Beach, Winchester
Faneuil District

Bath House at Havey Beach, Charles River, West Roxbury

quarters, mess hall, recreation building and other service structures proceeded at a fast pace and the camp was occupied by a full company of 206 men on August 27, 1935. The work in the remaining four months of the year consisted of the roug grading of 2.3 miles of automobile road, the construction of 1.5 miles of truck trail and the preliminary stages of a gypsy moth control campaign in both Breakheart and Middlesex Fells Reservations. A total of 11,061 man days of labor was contributed by the Federal Authorities on this work. The following report by Arthur A Shurcliff, Landscape Consultant for the Commission, conveys the method of supervision over work done in the various reservations.

"The need for improving the extensive woodlands of the Breakheart Reservatio s apparent on an examination of the narrow and steep trails of this public domain, and the unsatisfactory condition of the woodlands which have become clogged wit fallen trees and constitute a fire menace. The purpose of the plans, which you asked me to provide, is to save and create for the enjoyment of the public the most attractive woodlands possible, with full consideration of the good growth of trees, shrubbery and ground cover. Where the removal of such vegetation is essential to suc enjoyment and attractiveness, it is to be removed as shown on the plans.

The plans are devoted primarily to the improvement of the woodlands but a series of one-way motor roads are shown with parking spaces for the accommodation o vis tors. In general, these roads are widely spaced and do not attempt to penetrate the recesses of the woodlands. Every incentive is given to lead visitors to enjoy th woodlands on foot, and motors are to be kept out of sight as much as possible.

The following paragraphs indicate the interpretations which should govern th activities of the workers in the C.C.C. camps under the direction of their foremen and superintendent in charge.

Names of Plants. The foremen in charge of work should know the names of th trees, shrubbery and flowers of the Reservation and should be able to identify the in leaf or bare.

Definition of "Release." Where used in the plans the work "release" means to giv growing space, light and air, to ground cover, shrubbery, or trees which are being suppressed by other overshadowing vegetation.

Definition of "Undergrowth." Where the word "undergrowth" is used it mean small trees or shrubbery up to a height of 15 feet.

Twenty-five Per Cent "Hands-Off Area" in Each Compartment. In each compart ment shown on the plans a plot of ground of approximately twenty-five per cent o the area of the compartment should be left undisturbed as to trees, shrubbery, an ground cover irrespective of the general description given on the plan. The preser vation of these "Hands-Off Areas" is necessary to prevent an appearance of monot ony in the finished work. If changes are required in these "Hands-Off Areas" the will be indicated by the Landscape Architect.

Interpretation of Percentages. The approximate per cent of thinning of the tre and undergrowth to be done is indicated in the various areas on the plan. It is no intended that these percentage amounts shall be taken literally; they are mean rather, to serve as a rough indication of the amount of thinning desired. Thus "thi trees 20%" would mean to cut approximately one tree in five, or "thin 25% would mean to cut one in four.

Twenty-five per cent of each area is to be left untouched, as described abov regardless of the thinning directions given for that area.

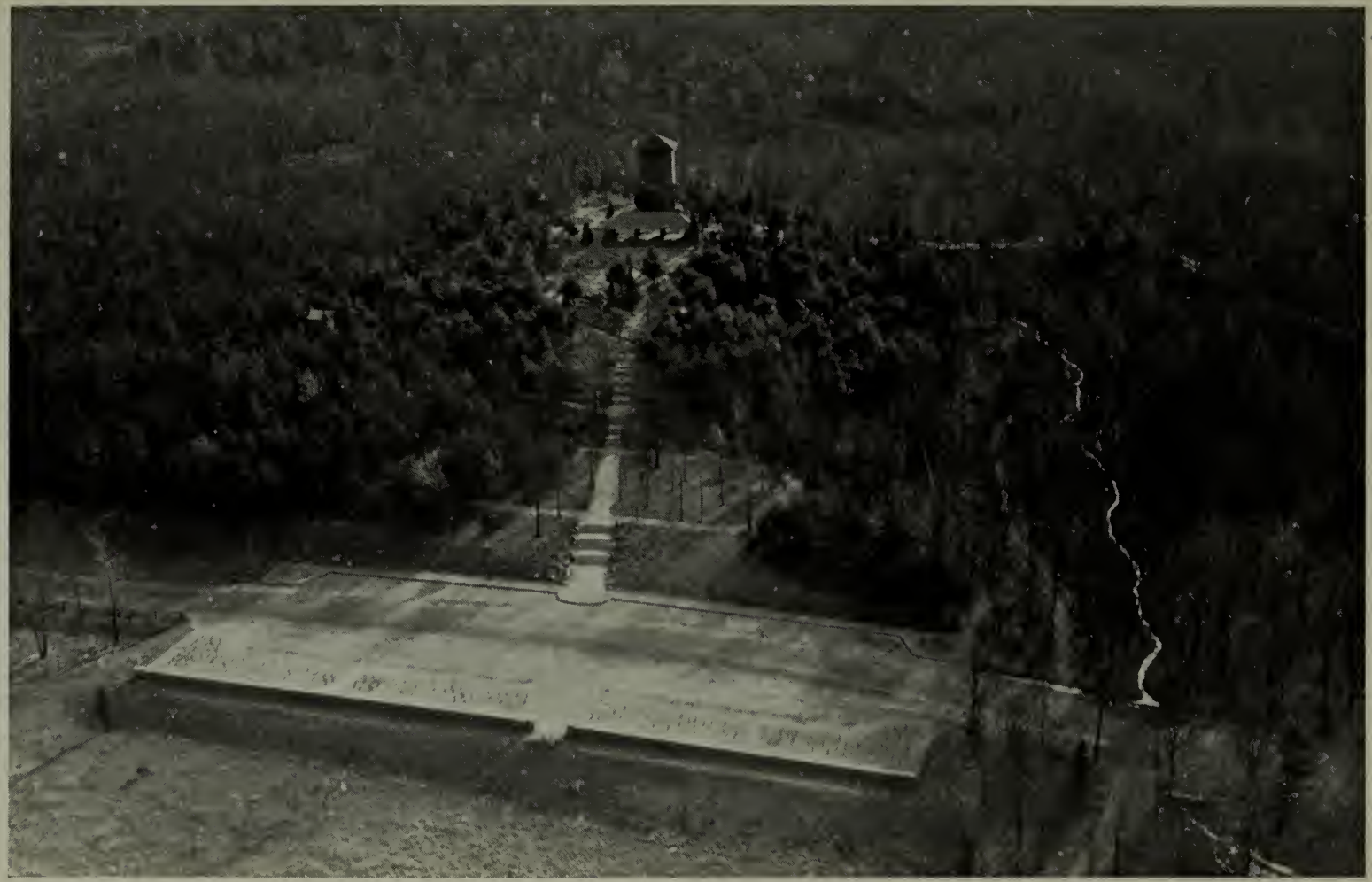
Preservation of Trees. Do not cut small or decrepit trees of rare kinds, like flowe ing dogwood, American chestnut, hophornbeam, blue beech, common beech, hack berry and hemlock.

Preservation of Birches. No wholesale removal of birches should be permitte except where called for by the plans. Birches should be preserved where noted.

Preservation of Shrubbery. Do not destroy the following types of shrubbery, excep where specified on the plans:

Azaleas	Dwarf Willows	Mountain Laurel
Blueberry	Ferns	Sheep Laurel
Buttonbush	Sweetfern	Rhododendron
Clethra	Huckleberry	All Viburnums
Coralberry	Inkberry	Witch-Hazel
Dogwood		

Views of Breakheart Reservation, Saugus and Wakefield



Courtesy of T. F. Hartley

Air View of Chickatawbut Overlook, Tower and Parking Area Built by Blue Hill C. C. Camps

COMMONWEALTH OF MASSACHUSETTS.
METROPOLITAN DISTRICT COMMISSION
PARKS DIVISION.

PRELIMINARY SKETCH PLAN FOR BREAKHEART RESERVATION

SCALE OF FEET.
100 0 100 200 300 400 500 1000 1500 2000

ARTHUR. A. SHURCLIFF.
11 BEACON STREET
LANDSCAPE ARCHITECT.
BOSTON MASS.

FEBRUARY 15, 1935.

UNITED STATES
DEPARTMENT OF THE INTERIOR
· NATIONAL PARK SERVICE ·
State Park Emergency Conservation work.

· COMMONWEALTH OF MASSACHUSETTS ·
METROPOLITAN DISTRICT COMMISSION.
SKETCH PLAN FOR BREAKHEART RESERVATION.

Approved By — Date.
Arthur A Shurcliff Feb 15 1935 — Drawn by C.S.C.
Camp Supt.
E C Kuttemeau — Procurement Officer, or other State Authority.
Frederick Humphreys 2/15/35 — Inspector.
District Officer.

Date Issued.

Preservation of Ground-Cover Vines. Care should be taken to preserve occasional impenetrable tangles of the common bullbrier, blackberry, wild rose, wild grape, bittersweet (celastrus) and smilax, but poison ivy should be removed wherever it is found.

Margins of Pond. A strip of ground 100 feet wide around all the ponds is to be considered a "Hands-Off Area," and no changes in the woodland shrubbery or ground cover should be made without direction of the Landscape Architect.

Pond Holes. The pond holes, or sink holes, where water stands in rainy weather should not be drained. These are an interesting feature and should be retained as they stand in 25 per cent "Hands-Off Areas."

Opening Vistas. Vistas should be opened only by the Landscape Architect who will mark the necessary trees and shrubbery.

Site for Fires. Fires for burning slash should not be built where nearby trees will be scorched or permanent ground scars will be formed. Wherever possible these fires should be built on the sites for future roads to avoid ground scars.

Parking Spaces, Public Toilets, Picnic Grounds, Rain Shelters, Bathing Facilities. Locations for these facilities will be shown on plans submitted herewith."

The Blue Hills camp continued during the year on its program of work in the Reservation. The company of World War veterans which occupied the camp since June, 1933, was transferred to the Second Corps Area, August 15, 1935, and was immediately replaced by a junior company. The Commission regretted the necessity for the transfer of the veterans as they had shown splendid spirit in the performance of their duties and contributed largely to the effort which placed the Blue Hills camp first in the contest for general excellence in the Fourth C.C.C. district. No ittle satisfaction, however, has been derived from the opportunity, of which the Commission took quick advantage, to promote seven of the veterans to salaried positions in the supervisory and facilitating personnel, and the retention of sixteen others in ratings as loca' experienced men at both Blue Hills and Breakheart. The daily number of men assigned to field work projects averaged 143, with a low of 104 in April and a high of 173 in September. The number retained for camp duties averaged 25. The stone observation tower, completing the development of the Chickatawbut Overlook, was finished in the fall. A dedication of the project, attended by National Director Robert Fechner of the C.C.C. and high ranking officers of the military and naval establishments, was held late in the year. The Commission takes pride in the fact that the construction of the Overlook is recognized as being one of the most distinctive and beautiful developments attempted under C.C.C. auspices in the entire country.

The height of the Overlook and its culminating Tower has enabled sightseers to enjoy at all seasons of the year the wide prospects of Massachusetts Bay, the Harbor islands, and the central Metropolitan Area, including Boston. The program of opening this part of the Reservation to motors and to large crowds of pedestrians has not trespassed on the forest areas and has not marked the Blue Hill Range with constructions which are visible at a distance. It has been possible to carry the motor road and the parking space to an outlook point of unusual scenic importance, and yet that outlook itself is not visible from the heart of the Reservation or from any portion of the Great Range.

Other work accomplished during the year included the construction of four latrines, the installation of five miles of police signal service cable, ten miles of truck trails rebuilt and one mile of park road maintained, three miles of horse trails completed, twenty-five acres of field planting, three hundred acres of gypsy moth control, one hundred and fifty acres of woodland cleared for fire hazard reduction and 3200 square yards of parking area construction.

The entire reservation was thoroughly scouted for the eradication of white pine blister rust and forty acres drained in a mosquito control project. One hundred and sixty-two man days were expended in forest fire fighting and twenty-seven man days in a search for a missing person. A total of 35,424 man days of labor was contributed by the C.C.C. organization on all projects.

The administration of C.C.C. affairs, in which the Commission participates with the Army and National Park Service, has been doubly pleasurable in the exceptional opportunity it has provided for a cordial and co-operative relationship with these efficient agencies of the federal service.

Federal Emergency Relief Activities

The Commission was enabled to initiate a diversified program of secondary construction and development in the parks and water divisions by a relaxation of the restrictions, made effective in April, 1934, which limited participation in the Emergency Relief Administration work program to cities and towns.

A new regulation in the early spring of 1935 made it possible for State agencies to submit applications for work projects, on which tools, materials and equipment could be furnished, through local ERA administrators in communities where projects could be worked.

A total of nineteen projects were approved on which a maximum number of 1823 workers were employed. The projects in the parks division included the construction of truck trails and service roads, filling, grading and landscaping of unsightly areas contiguous to parkways, beaches and river fronts, construction of parking spaces, retaining walls, sidewalks, foot paths and other similar work. One project provided employment for 22 life guards at the bathing beaches in the Blue Hills Division.

The Water Division projects covered the laying of an intermediate high service pipe line in Belmont, Watertown and Arlington, the construction of a swimming pool in Rufus Putnam Park in Rutland and the diversion of East Waushacum Lake in Sterling.

A total of $437,783.00 of federal relief money was expended for labor and supervision on the projects. An expenditure of $12,980.80 from Commission funds for the purchase of 16 small dump trucks for trucking and transportation of workers was made. In addition, trucking and uses of other power equipment to a value of $23,240.00 at nominal rental rates were contributed to the projects from Commission-owned equipment. The purchase of hand tools and other light equipment entailed an expenditure of $6,745.00. The procurement of materials such as crushed stone, asphalt, bituminous concrete, rip-rap, cement, sand, gravel, vitrified drain pipe, cast iron water pipe, lumber, loam, grass seed and other planting materials, involved expenditures totalling $43,400.00. Engineering and other supervision by Commission personnel was contributed to a value of $17,525.00.

The transfer of Emergency Relief Administration projects to the Works Progress Administ ation began during the latter part of the year. Several applicat ons for new projects have been submitted to the federal authorities to replace those near completion. One now under consideration involves the expenditure of $500,000.00 of federal funds with a State contribution not exceeding $50,000.00 for the construction of a 16-foot one-way motor road up and down Great Blue Hill in Milton.

Public Works Administration

The following list of heavy construction projects was submitted July 15, 1935 to the Public Works Administration, at the suggestion of the Governor, in anticipation of the possibility that 100 per cent grants from federal funds could be obtained.

Met. Dist. 1. Revere Beach Parkway — widening and reconstruction — $2,089,011.

An improvement to eliminate congestion on one of the most overcrowded main thoroughfares to the North Shore Beaches. (Complete project submitted.)

Met. Dist. 2. Nantasket Beach Reservation — widening, improving and extending parkway — $1,225,000.

The improvement will provide desirable development in an area where a splendid opportunity is presented. (Complete project submitted.)

Met. Dist. 3. Old Colony Parkway — construction of bath house and other improvements at Savin Hill — $175,000.

A desirable improvement of a popular recreation center now without suitable facilities. (Complete project submitted.)

Met. Dist. 4. Mystic Valley Parkway — extension of parkway and traffic circle at Mystic Avenue in Medford — $260,000.

A desirable project to connect a new route to Revere Beach Parkway and the North Shore, and the e imination of serious congestion at Medford Square. Length 2500 ft. — width of road 40 ft.

Met. Dist. 5. Four traffic circles at the following points:

(a) Cottage Farm Bridge and Memorial Drive	$200,000
(b) Quincy Shore Reservation at Hancock Street, Quincy	75,000
(c) West Roxbury Parkway at Centre Street	60,000
(d) Alewife Brook Parkway and Mystic Valley Parkway	45,000
Total	$380,000

Desirable projects in that they will relieve serious congestion at important parkway intersections.

Met. Dist. 6. Quincy Shore Reservation — widening and shore protection, Quincy — $1,000,000.

The project will widen a congested and widely used shore drive. The present 65 foot single roadway and walks to be widened to a 110 ft. double driveway road. Total length 14,000 ft.

Met. Dist. 7. Nahant Beach Parkway — Parking space and traffic circle — $50,000.

To complete a desirable development of a widely used recreational area, and eliminate a traffic hazard. The present ungraded area which can be developed for parking is approximately a mile in length, and will accommodate 5000 cars.

Met. Dist. 8. Reconstruction and resurfacing of present Metropolitan Boulevards and Parkways — $613,000.

The modernizing of many of these parkways is desirable in order to cope with present traffic conditions.

Met. Dist 9. Charles River Reservation — bridge over the Charles River at Gerry's Landing — $470,000.

The project is advisable in order that present or proposed parkways may connect up in a proper manner. The bridge will be a three-span, re-enforced concrete structure with traffic circles at each end.

Met. Dist. 10. Parkway from Memorial Drive, Cambridge to Arsenal Street, Watertown — $200,000.

A desirable connecting link in the development of the parkway system in the Charles River Reservation. Total length 6500 ft. — width of roadway 40 ft.

Met. Dist. 11. Blue Hills Reservation — road extensions and improvements — $340,000.

The project will modernize and extend many badly congested and unsafe roads in the Blue Hills District.

Met. Dist. 12. Lynn Fells Parkway — extension of parkway and traffic circle — $175,000.

The improvement provides a traffic circle at Newburyport Turnpike intersection, and the extension of the parkway to Walnut Street, Saugus. Length, 2500 ft.; width of roadway 40 ft. A portion of the roadway location has been prepared to subgrade.

Met. Dist. 13. Charles River Basin — Central Garage and service station — $250,000.

This project will provide badly needed garage space and facilities for overhauling and servicing motor equipment. The building will be eighty by forty feet.

Met. Dist. 14. Mystic Valley Parkway — underpass at Main Street, Medford — $320,000.

This improvement will separate grades at a badly congested intersection, and materially improve traffic conditions in Medford Square.

Met. Dist. 15. Revere Beach Reservation — shore protection — $250,000.

The project will eliminate the possibility of much expensive storm damage at periodic intervals. The work will extend a distance 3300 ft. northerly from Revere Street.

Met. Dist. 16. Neponset River Parkway — extension to Paul's Bridge — $800,000.

The project will provide a desirable connecting link in a network of important highway and park routes. The roadway extension will be 1500 ft. long, the width 40 ft. from Damon Street to the proposed State highway at

Paul's Bridge. A long span bridge over the railroad and the Neponset Rive is included.

Met. Dist. 17. Middlesex Fells Reservation — observation tower — $20,000.

The tower will replace the Lawrence observatory which is in an unsaf condition. The overlook is widely used by the public.

Met. Dist. 18. Water supply pressure tunnel in Southborough to by-pass — Sudbury Reservoir — $4,830,000.

The project will provide a means of diversion of water from the Wachuset Reservoir past the Sudbury Reservoir. A tunnel, 15 ft. in diameter an 22,000 ft. long is involved. (Complete project submitted.)

Met. Dist. 19. Completion of Low Service Water Pipe Line for Everett, Chelsea and East Boston — $775,000.

The large industrial area served at present by a 42 in. pipe line will b given additional fire protection and assurance against accidental interruptio to service. 17,500 ft. of 48 in. steel pipe, including tunnel under Malde River. (Complete project submitted.)

Met. Dist. 20. Completion of High Service Water Pipe Lines for Dorchester Milton and Quincy — $650,000.

A large industrial and residential area, now served with a single pipe line will be assured of the necessary additional protection by this project. Worl includes two miles each of 48-in. and 36-in. steel pipes, including a railroa crossing. (Complete project submitted.)

Met. Dist. 21. Extra High Service Reservoir in Arlington — $350,000.

Reservoir of two million gallon capacity and two miles of 20 in. cast iro pipe to provide adequate fire protection, domestic service, and sewage dis posal in a fast growing suburban residential area in Arlington and Lexington (Complete project submitted.)

Met. Dist. 22. Water Supply Pressure Tunnel from Sudbury Dam to Westo Aqueduct — $14,000,000.

The project will complete the continuous pressure tunnel from the Wachu sett Aqueduct terminal to the centers of consumption, practically eliminatin all cost of pumping. 11.6 miles of 15 ft. diameter tunnel.

Met. Dist. 23. Water Supply Pressure Tunnel from Weston Aqueduct Termina to East Boston — $21,000,000.

The project will provide delivery of water directly to the centers of con sumption at a considerably increased pressure, and free from the hazards o large supply mains in the streets. 13.8 miles of 15 ft. diameter pressur tunnel.

Met. Dist. 24. Completion of Weston Aqueduct Siphons — $500,000.

The Weston Aqueduct in crossing two deep valleys by a single steel pip 7 ft. 6 in. in diameter is limiting the capacity of the aqueduct to these singl pipes, and is now barely adequate for the needs of the district. The propose additional line, 9 ft. in diameter and aggregating 4750 ft. in length wil increase the capacity to that for which the entire aqueduct was originall designed.

Met. Dist. 25. Alewife Brook Relief Sewer — $605,000.

The project will provide additional service for an area which through recen growth is in need of attention. The present sewer is now fully surcharge during the greater part of the time. (Complete project submitted.)

Met. Dist. 26. Rebuild Alewife Brook Sewerage Pumping Station — $100,000

The present building which is now inadequate will be demolished. A large structure will be erected, and operation will be by electric energy instead o steam.

Met. Dist. 27. Mystic River Basin Relief Sewer — $1,820,000.

The project will provide additional facilities to overcome the inadequacy of the present sewer. The estimate covers 22,720 ft. of 72 in. sewer at $80.0 per ft.

Met. Dist. 28. Malden River Cut-off Sewer — $675,000.

The project will provide an adequate outlet for three existing branch sewers to relieve present surcharged conditions. The estimate is based on 9,000 ft. of 72 in. sewer at $75.00 per ft.

Met. Dist. 29. Arlington Relief Sewer — $290,000.

The present Metropolitan sewer in this district is at such an elevation as to cause Arlington local sewers to overflow into the streets. This project will eliminate this condition. The estimate covers 6400 ft. of 40 in. sewer at $45.00 per ft.

Met. Dist. 30. Cambridge Relief Sewer — $2,427,000.

This project will eliminate the pollution of the Charles River Basin from a northerly direction, by providing adequate run-off facilities and preventing overflow.

The estimate contemplates the following:

7670 ft. 72 in. sewer including 1100 ft. of siphon under Mystic River at $100.00 per ft.

21,300 ft. 48 in. to 72 in. sewer av. $75.00 per ft.

Additional pumps at Charlestown Station $60,000.

Met. Dist. 31. Additional Charlestown Discharge Sewer — $420,000.

The project will provide added discharge facilities which will be necessary if relief sewers in the Cambridge project are authorized. The estimate is 6000 ft. of 74 in. sewer at $70.00 per ft.

Met. Dist. 32. North System Outlet through Everett and Chelsea to East Boston Pumping Station — $960,000.

This project will provide part of the additional discharge facilities which will be necessary in the event that other relief projects along the north system are authorized.

Met. Dist. 33. East Boston Pumping Station — 2 pumps and boilers — $200,000.

Additional pumping facilities will be necessary to discharge the increased flow from the enlarged North System if authorized. Two 100 million gallon pumps and boilers at $100,000 each.

Met. Dist. 34. East Boston Pumping Station to Deer Island Pumping Station — $2,210 000.

Additional discharge sewer capacity will be necessary to carry the increased flow from the enlarged North System if authorized. 26,000 ft. of 132 in. sewer at $85.00 per ft.

Met. Dist. 35. Deer Island Pumping Station — two pumps and boilers — $200,000.

Additional pumping facilities will be necessary to discharge the increased flow from the enlarged North System if authorized. Two 100 million gallon pumps and boilers at $100,000 each.

Met. Dist. 36. Deer Island Harbor Outfall — $400,000.

An additional outfall into Boston Harbor will be necessary to discharge the additional flow from the North System if the enlargement of the system is authorized. 4000 ft. of 72 in. outfall at $100.00 per ft.

Met. Dist. 37. South Metropolitan System Charles River Relief Sewer — $1,000,000.

This project will eliminate the pollution of the Charles River Basin from a southerly direction, by providing adequate run-off facilities and preventing overflow.

The estimate includes:

17,000 ft. of 48 in. to 60 in. sewer	$750,000
Pumping Station	100,000
3200 ft. of 42 in. Force Main	150,000
	$1,000,000

Cooperation with the Municipailties

The Commission believed that it could be of greater service to the various Metropolitan District municipalities if, from time to time, it could meet with the heads of these municipalities and talk over the desires and needs of the Metropolitan District. In order to carry out this idea, a communication was sent to each city or town official requesting their attendance at a meeting to be held on January 31, 1935, to discuss this plan with the Commission. Practically all of the municipalities were represented and a general discussion of legislative and Metropolitan District matters apparently aroused considerable interest. It was agreed by those present

at this gathering that similar meetings should be held during the time the legislatur was in session, in order to get a more intimate knowledge of proposed Metropolita District legislation. Another meeting was called later and about eighteen muni cipalities were represented, at which time a committee representing nine cities an towns was appointed to hold meetings and consider matters pending in the legisla ture. These meetings were later dropped due to lack of interest on the part of th municipalities in the District. Cooperation has been given the various municipal ities in the district by the Commission in all matters that did not call for the expendi ture of money. Owing to a limited appropriation, some requests could not be grantec

Permission was granted the City of Everett for the extension of Kelvin Street int Revere Beach Parkway and to fill in an adjoining piece of reservation land and buil a playground.

A portion of Charles River Reservation land in Auburndale was transferred to th City of Newton for playground purposes.

Permission was granted the Winchester Water and Sewer Board to fence off pa of the Sheepfold Playground in the Middlesex Fells Reservaiton for the protectio of their water supply.

SNOW REMOVAL

Snow Fall	*Month*	*Year*	
4 in.	December	1934	
28 in.	January	1935	(Snow fall on Jan. 23rd was 15 in.)
10¼ in.	February	1935	
2½ in.	March	1935	
2 in.	April	1935	

46¾ in. — total.

The Metropolitan Commission have approximately 100 miles of roads to b plowed and approximately 90 miles of sidewalks. During the season 1934 to 193 it required 32 trucks to clear the snow from the road and 10 sidewalk snow plow to clear the walks.

Sixteen new 1½ ton trucks were purchased during the year so that practicall all snow removal is now handled by department equipment. This additional equi ment has reduced to a large extent the expense formerly required for snow remov due to the hiring of contractor's equipment.

V. Special Investigations

In accordance with the provisions of Chapter 50 of the Resolves of 1935, th Metropolitan District Commission and the Department of Public Works, actin as a Joint Board, were required to make an investigation of the following matters:

1. Widening, reconstructing, better lighting and extending the Woburn Parl way in Woburn.
2. Widening and reconstruction of a certain highway in Medford an Stoneham.
3. Laying out and construction of a boulevard in the city of Medford.
4. Construction of a bridge over the Charles River in the town of Watertow
5. Acquisition, for reservation purposes, of all the real estate not alread owned by the Commonwealth abutting on the easterly side of a portic of Endicott Avenue in Revere.
6. Construction of a beach and bath house at Hoosicwhisick Pond (Houghton Pond) in the town of Milton.
7. Advisability of improving, for beach and park purposes, certain state lan on the northerly side of Shore Drive adjoining the Mystic River in th city of Somerville.
8. Advisability of constructing a beach and bath house on the shore of Da Hollow Pond in the town of Stoneham.
9. Constructing a bathing beach and bath house in the Mystic River Bas in the town of Arlington.
10. Improvement of certain land in Milton and in the Hyde Park District Boston for park and playground purposes, and of the Neponset River f bathing purposes.

11. Construction and maintenance of a public bath house and incidental improvements on the Charles River in the town of Watertown.
12. Construction and maintenance of recreational facilities on the Charles River in the town of Watertown.
13. Construction and maintenance of a beach and bath house on the Charles River in the city of Waltham.
14. Construction of a building for bath house and recreational purposes at the beach at Gerry's Landing an the Charles River in the city of Cambridge.

The Department of Public Health rendered valuable assistance investigating the sanitary conditions at the locations of the proposed bath houses and collected and analyzed the waters at the proposed locations of the beaches and recreational areas.

A complete report of these matters with plans, is printed as Senate 100.

In accordance with the provisions of Chapter 27 of the Resolves of 1935, the Metropolitan District Commission were required to make an investigation and report relative to the acquisition of certain lands in the city of Revere to be used as motor vehicle parking areas as part of the Revere Beach Reservation. The report with plan is printed as House 195.

In accordance with the provisions of Chapter 36 of the Resolves of 1935, the Metropolitan District Commission were required to make an investigation and report relative to the advisability and probable cost of dredging the ponds located in that part of the Blue Hills Reservation known as the Saint Moritz section. The report with plan is printed as House 163.

In accordance with the provisions of Chapter 43 of the Resolves of 1935, the Metropolitan District Commission were required to make an investigation and report relative to the advisability and probable cost of extending the Mystic Valley Parkway and the construction of a traffic circle at the junction of Mystic Avenue, Harvard Street and Mystic Valley Parkway in Medford. The report with plan is printed as House 196.

VI. Police Department

During the past year a number of changes were made in the personnel of the Metropolitan District Police.

Executive Officer Edward M. Woods, who has been in charge of the Police Department for the past six years, was promoted to Superintendent of Police, October 4, 1935, and will devote his entire time to police matters. He was relieved of the supervision of the maintenance work of the Middlesex Fells Division by the promotion of Lieutenant James F. Rogers to Captain in charge of this division. One Sergeant was promoted to Lieutenant, three patrolmen were promoted to Sergeants and eight patrolmen were appointed. As authorized under Chapter 337 of the Acts of 1935, hearings were given to a number of former Metropolitan Police Officers who had been separated from the service by discharge or other cause. Four of these men were recommended to the Civil Service Commissioner for reinstatement, who approved the recommendation and they were reinstated December 20, 1935. At the end of the year the force was as follows:

1	Superintendent
6	Captains
6	Lieutenants
21	Sergeants
194	Patrolmen
1	Policewoman
4	Call Officers
Total 233	

In addition to the regular force, thirty-two call officers and one temporary policewoman were appointed during the summer months.

Officer Alfred F. Hill was retired November 1, 1935, after thirty-three years of service.

The Commission has received many commendatory letters from citizens, organizations, cities and towns praising members of the police force and the department as a whole. Unknown to the public they have rendered service such as freely offered and have given their blood in urgent cases where blood transfusion was

necessary. The following eight officers were commended for meritorious police work in general orders by the Commission:

Officer Philip M. Sullivan	Charles River Upper Division
Officer William L. Gibson	Charles River Lower Basin
Officer Francis P. Barnic e	Charles River Lower Basin
Officer John I. Boudrot	Charles River Lower Basin
Officer James L. Sullivan	Revere Beach Division
Officer Hugh J. O'Neil	Charles River Lower Basin
Officer Harry O. Coulter	Charles River Lower Basin
Officer John A. Kane	Blue Hills Division

Lost property to the value of $44,939.80 was recovered and returned to the owners. 6,436 hours of extra duty without compensation were cheerfully performed by members of the force to care for visitors at special features, such as handling the crowds attending the concerts, regattas, races, football games, etc.

The Department had 3,296 cases before the various courts during the year. Not included in that number were many cases of wayward and runaway girls that were handled by the police without court action. 998 of these cases were for offences against the General Laws. 1,084 were cases of offences against the Motor Vehicle Laws. This number includes 203 cases of operating motor vehicles while under the influence of intoxicating liquor. 1,214 cases of violations of the rules and regulations of the Metropolitan District Commission were taken before the courts. Of these, 143 were against the General Rules and 1,071 against the Motor Vehicle rules. Fines to the amount of $17,240.00 were assessed by the Courts.

A detail of the above cases will be found in Appendix 3.

During January and February, the department was drilled in marching in accordance with United States Army regulations, under Captain Henry E. Hayes as drill master and Lieutenant T. J. Kelleher as Assistant drill master. These drills were preceded by lectures on such subjects as first aid, criminal law, court procedure, etc., by superior officers of the Department, and others. New officers are required to attend a school of instruction before being assigned to street duty.

The Metropolitan District Police have jurisdiction over police matters in the Water, Sewerage and Parks Districts.

VII. Metropolitan Water District and Works

The Water District now includes 20 municipalities with an area of about 174 square miles and a population as of July 1, 1935 of 1,553,550. The Water Works lands include an area of about 19,000 acres, of which about 2,000 acres have been planted with pine trees.

The works under the control of the Water Division include 9 storage reservoirs with 200 square miles of tributary watershed, a total storage capacity of 80 billion gallons and water surface of 8,600 acres; 60 miles of aqueducts; 2 hydroelectric power stations of a capacity of 7,000 horse power; 16 miles of high-tension power transmission line; 5 distribution pumping stations with a combined equipment of 7,800 horse power and pumping capacity of 340 million gallons a day; 12 distribution reservoirs with a capacity of 2.5 billion gallons, and 173.73 miles of distribution mains. The consumption of water from the Metropolitan Water Works during the year by the 18 municipalities entirely supplied was 47,863,959,000 gallons, equivalent to an average daily consumption of 131,134,100 gallons or 91 gallons per capita for a population of 1,436,700 in the district supplied.

Construction

Northern High Service Pipe Lines

The work begun in 1933 of reinforcing the single pipe line, through which the towns of Nahant and Swampscott have been supplied with water since 1899, was completed November 9. The work done on this project during 1935 includes the construction of the water pipe tunnel under the ship channel in the Saugus River at the General Clarence R. Edwards Bridge and the laying of 4,224 linear feet of 20-inch cast-iron and flanged steel pipes on the bridge and in the highway approaches thereto and 406 linear feet of 30-inch flanged steel pipe in the tunnel to close the gap between the ends of the 20-inch pipe lines laid in 1933 and 1934 in Lynn and Revere

on the northerly and southerly sides of the river. This work was done under Contracts Nos. 98 and 102. The total cost of this work was $80,153.19.

Under Contract No. 108 there was insulated 1,169 linear feet of the 20-inch pipes and 86 linear feet of the 30-inch pipes where exposed to the air on the bridge with built-up 100 per cent cattle hair felt to prevent the freezing of the water in the pipes during cold weather. The total cost of this work was $6,240.00.

Reinforcement of Low Service Pipe Lines

The work of reinforcing the low service pipe lines at the Wellington Bridge over the Mystic River, which was begun in 1934, was completed August 17, 1935. The work of constructing a water pipe tunnel under the ship channel and laying 42-inch flanged steel water pipes therein at this bridge, which was in progress at the close of 1934 under Contract No. 99, was completed April 1. The cost of the work done under this contract in 1935 was $62,617.33.

The work of laying 660 linear feet of 42-inch steel pipe and 730 linear feet of 48-inch steel pipe on Wellington Bridge and approaches thereto to connect the new line with the existing line on the Medford and Somerville shores of the river was begun under Contract No. 106 May 23, and was completed August 1. The total cost of the work done under this contract was $22,216.96.

Under Contract No. 108 there was insulated 84 linear feet of the 42-inch pipe between the tunnel and the bridge with built-up 100 per cent cattle hair felt to prevent freezing of the water in the pipes during cold weather, where exposed to the air. The cost of this work was $1,167.00.

Under Contract No. 104 there was laid 9,467 linear feet of 48-inch steel pipe. This pipe line extends from a connection with the existing mains at Governor's Avenue and High Street in Medford, through High Street, Riverside Avenue, Fourth and Third Streets to a connection with an existing main in Middlesex Avenue. The work was begun June 6 and the pipe line was completed and put into service at the close of the year. The total cost of the work done under this contract was $209,264.87.

Improvements for Belmont, Watertown and Arlington

At the close of 1934 sites had been selected for an Intermediate High Service Reservoir on Arlington Heights and for a pumping station on Clifton Street in Belmont to improve the service for portions of Belmont, Watertown and Arlington. There was strong objection from the residents near Clifton Street and from the town officials to the construction of a pumping station in that location, and as a result the 1935 working season was well advanced before it was finally determined to locate the pumping station on Alexander Avenue near Leonard Street.

About that time the town officials proposed that the new pipe lines be constructed in cooperation with the town as a Federal E.R.A. project to provide work for the unemployed. This proposal was adopted and the work of laying the 20-inch water pipes was begun July 2 and was continued as an E.R.A. project until November 25, and after that date was continued as a Federal W.P.A. project. At the close of the year 7,810 linear feet of 20-inch pipe line had been laid, completing the portion of the line from a point about 50 feet north of the Watertown boundary line at Belmont and Common Streets, through Common Street and Leonard Street to a point about 150 feet north of Alexander Avenue and including about 150 feet of branch line in Alexander Avenue, and a metered connection had been made with the town of Belmont 12-inch water main on Common Street at Washington Street.

The average number of men employed per day was 54 and the maximum force 172 on December 12. The total expenditures for this work by the Federal Government was about $37,700.

Contracts Nos. 103 and 103½ for furnishing the water pipes required for this work have been completed. The cost of the materials furnished under these contracts was $74,875.86.

Contract No. 107 was made for excavating the rock uncovered in the pipe trenches but no payment had been made under this contract at the close of the year.

The total expenditures by the Commonwealth for the Intermediate High Service works during 1935 amount to $114,248.48.

Maintenance

Precipitation and Yield of Watersheds

For the Wachusett watershed the annual precipitation of 41.42 inches is 3.76 inches below the average for the past 39 years during which the Water Works records have been kept for the watershed. For the Sudbury watershed the annual precipitation of 38.90 inches is 5.47 inches below the average for the past 61 years and for the Cochituate watershed the annual precipitation of 42.58 inches is 2.29 inches below the average for the past 73 years.

The average daily yield per square mile for the watersheds was 1,132,100 gallons for the Wachusett, 948,000 gallons for the Sudbury and 990,000 gallons for the Cochituate. These yields are above normal by about 3.9 per cent on the Wachusett and 6.3 per cent on the Cochituate and 2.2 per cent below normal on the Sudbury watershed.

Storage Reservoirs

The capacities of the storage reservoirs of the Metropolitan Water Works, the elevation of the water surfaces and the quantity of water stored in each reservoir at the beginning and at the end of the year are shown by the following table:

Storage Reservoirs	Elevation[1] of High Water to top of flash boards	Total Capacity (Gallons)	Jan. 1, 1935		Jan. 1, 1936	
			Elevation[1] of Water Surface	Available Storage (Gallons)	Elevation[1] of Water Surface	Available Storage (Gallons)
Cochituate Watershed:—						
Lake Cochituate[2]	144.36	2,097,100,000	143.38	1,768,300,000	142.39	1,537,800,000
Sudbury Watershed:—						
Sudbury Reservoir	260.00	7,253,500,000	257.83	5,098,070,000	257.99	5,163,730,000
Framingham Res. No. 1	169.32	289,900,000	167.79	129,970,000	167.66	124,420,000
Framingham Res. No. 2	177.12	529,900,000	176.28	443,740,000	176.06	434,320,000
Framingham Res. No. 3	186.74	1,180,000,000	184.74	858,300,000	184.80	863,100,000
Ashland Reservoir	225 21	1,416,400,000	224.55	964,050,000	224.28	949,200,000
Hopkinton Reservoir	305.00	1,520,900,000	304.15	1,016,700,000	304.01	1,008,020,000
Whitehall Reservoir	337.91	1,256,900,000	337.89	945,940,000	337.65	899,050,000
Wachusett Watershed:—						
Wachusett Reservoir	396.50	67,000,000,000	389.56	46,797,900,000	382.86	38,560,460,000
Totals	–	82,544,600,000	–	58,022,970,000	–	49,540,100,000

[1]Elevation in feet above Boston City Base.
[2]Excluding Dudley Pond which was abandoned April 3, 1916.

The total storage capacity shown in the third column of the table is to the bottom of the reservoirs. The available storage shown in columns 5 and 7 is the quantity that can be conveniently used for consumption.

Wachusett Reservoir

At the beginning of the year the water in the Wachusett Reservoir was at elevation 389.56 or 5.44 feet below the designed high-water line, and the quantity of water stored in the reservoir was 57,797,900,000 gallons or 88.96 per cent of full capacity. The water level varied but little from this elevation until January 9 when a heavy rain caused an increase in the inflow which constantly and rapidly filled the reservoir to within about 1.5 feet of full reservoir level on January 27, where it remained until March 6 when melting snow caused the water level to begin to rise again, and on March 13 full reservoir level or elevation 395 was reached. From March 13 until May 8, and on three days in the latter part of June, there was wasting of surplus water over the spillway. During the first period of wasting, the reservoir level raised on the spillway flashboards 1.61 feet or to elevation 396.61 and the reservoir contained 67,152,400,000 gallons of water, being the maximum for the year, which occurred at 4 P.M., May 7.

During the wasting periods and for a few weeks before and after, there were discharged into the Nashua River below the dam, as waste water and leakage at the flashboards, 6,550,800,000 gallons of water. The greatest flow of water over the spillway was at the rate of 474,000,000 gallons per day from 3 P.M. to 4 P.M. on May 7. The level of the water in the reservoir remained substantially at elevation

396.5 until June 26 when the demand exceeded the inflow and the water level began to lower at a rate of about 2.3 feet per month due to the requirements of the Metropolitan Water District.

At the close of the year the water in the reservoir was at elevation 382.86 or 12.14 feet below the designed high-water line, which was the lowest stage for the year and the reservoir contained 49,560,500,000 gallons of water. The net loss in the amount of water in storage from the beginning to the close of the year was 8,237,400,000 gallons.

The city of Worcester did not operate its emergency pumping plant on the shore of the Wachusett Reservoir at South Bay, Boylston during the year nor divert any water from Quinapoxet Pond. During the first six months of the year the city discharged 2,137,100,000 gallons of water into the Wachusett Reservoir watershed from the Pine Hill area, formerly tributary to the reservoir, which was diverted by the city for its supply in 1911. During October the city removed the pumps and piping from the emergency pumping plant on the shore of the reservoir at South Bay, removed the portion of the building which housed the pumps, and graded the grounds, leaving the motors, electric control apparatus and the building housing them, for removal later.

During the year 189,100,000 gallons of water was received from the Ware River at Coldbrook.

The town of Clinton pumped 147,600,000 gallons of water from the Wachusett Reservoir from July 12 to December 27 under the provisions of the Acts of 1923, Chapter 348. In compliance with General Laws, Chapter 92, Section 14, 664,100,000 gallons of water was discharged from the reservoir into the Nashua River in addition to the water wasted from the reservoir in the spring.

The usual work of cutting and burning brush and weeds growing along about 45 miles of the North and South dikes, sides of adjacent highways, and along brooks and rivers which flow directly into the reservoir, has been done at a cost of $5,585.

New wire fences and stone walls, enclosing Water Works land, were erected for a distance of 5,800 feet along property lines and highways in Boylston, West Boylston, Sterling, Holden and Clinton.

The grounds and structures at this reservoir have been cared for in the usual manner, and necessary repairs have been made.

Sudbury Reservoir

At the beginning of the year the water in the Sudbury Reservoir was at elevation 257.83 or 1.17 feet below the stone crest of the overflow of the dam and at the end of the year the elevation of the water in the reservoir was at 257.99 or 1.01 feet below the stone crest of the dam. From January 1 to April 12 when the flashboards were off the spillway, the water in the reservoir varied from elevation 258.94 on January 11 to 254.36 on March 4, or at an elevation averaging about 2.20 feet below the crest of the overflow. From April 12 to November 19 when the flashboards were on the dam the elevation varied from 259.99 on June 15 to 257.06 on August 19 or at an elevation averaging about 0.30 of a foot below the stone crest. From November 19 to the end of the year, when the flashboards were off again, the water varied from elevation 259.10 on November 21 to 257.65 on December 30, or at an elevation averaging about 0.50 of a foot below the stone crest of the overflow of the dam. Due to the yield from the heavy rain during the last half of November, water was wasted over the stone crest of the spillway of the dam into Framingham Reservoir No. 3, November 19 to 23, inclusive, and on November 29 and 30. A total of 106,200,000 gallons was so wasted.

On January 8 water was by-passed under units Nos. 1 and 2 from 8:30 A.M. to 12.30 P.M. to allow the Edison Electric Illuminating Company of Boston to set new poles on line 56–108. A total of 15,300,000 gallons of water was by-passed.

With the exception of the 106,200,000 gallons passed over the spillway of the dam into Framingham Reservoir No. 3 and the 15,300,000 gallons by-passed into the Weston Aqueduct, all of the water drawn from the Sudbury Reservoir was used to generate electricity.

The boathouse on the north shore of the reservoir, which was begun last year, has been completed. Three new regular screens and one new cleaning screen were built and installed at the Weston Aqueduct head house and new iron guides were put in

to replace the old wooden ones. The new screens are better and stronger than the old ones, and the new guides are a great improvement over the old ones.

The grounds and structures at this reservoir have been cared for in the usual manner, and necessary repairs have been made.

Framingham Reservoir No. 3

At the beginning of the year the water in this reservoir was at elevation 184.74 and varied from 182.99 on March 5 to 186.42 on November 24 or at an average of 0.21 of a foot below the stone crest of the dam. At the end of the year the water was at elevation 184.80. The water in this reservoir was maintained at a convenient elevation by drawing water from the Sudbury Reservoir. All of the water drawn through the Sudbury Aqueduct for the supply of the Metropolitan Water District and the town of Framingham was supplied from this reservoir. The flashboards were kept in place on the overflow of the dam throughout the year.

Water was wasted from this reservoir due to the excessive yield on 6 days in January, from February 1 to March 30, inclusive, 14 days in April and 23 days in May. The total waste during the year was 7,595,700,000 gallons.

The shores of the reservoir have been cleaned and the buildings and grounds have been cared for; the fences and driveways have been repaired and the 5-foot lanes along the property lines were mowed and kept free from sprouts and weeds.

Ashland, Hopkinton and Whitehall Reservoirs and South Sudbury Pipe Lines and Pumping Station

No water was drawn from the Ashland, Hopkinton or Whitehall reservoirs for consumption during the year. These reservoirs were kept well filled with water and the yield not required for that purpose was wasted into the Sudbury River.

During the cold weather a flow of water sufficient to prevent freezing was maintained in the pipe line from Whitehall Reservoir to Hopkinton Reservoir from January 1 to April 23 and from November 25 to the end of the year.

The department buildings at Ashland and Hopkinton reservoirs were repaired, the grass lands were mowed, the trees and shrubs were kept in good condition, and the lanes along the boundary lines were kept open by cutting and burning brush and weeds.

The South Sudbury Pipe Lines and Pumping Station were not used during the year to divert water from the South Sudbury watersheds for consumption because of the abundant supply of water of better quality obtained from the Wachusett and North Sudbury watersheds.

Framingham Reservoirs Nos. 1 and 2 and Farm Pond

No water has been drawn from Framingham Reservoirs Nos. 1 and 2 for water supply of the Metropolitan Water District during the year and the yield from their watersheds has been wasted into the Sudbury River.

Grass, weeds and brush have been mowed on the Water Works lands at these reservoirs, and the structures have been cared for and repaired as required.

The town of Framingham pumped 181,162,000 gallons of water from the filter galleries on the shore of Farm Pond during the year. To stop trespassers from damaging the rip-rap along the aqueduct across Farm Pond, two sections of chain-link fence with a barbed wire top were built at a cost of $517.44.

Under legislative authority the Boston and Albany Railroad used approximately 26,292,000 gallons of water and the New York, New Haven and Hartford Railroad used approximately 5,600,000 gallons of water directly from Farm Pond for use in locomotives during the year.

Lake Cochituate

No water was drawn from Lake Cochituate for the supply of the Metropolitan Water District during the year, and to keep the water in the lake at the desired elevation it was necessary to waste 2,286,600,000 gallons at the outlet.

The Water Works lands around the lake were cared for in the usual manner and the lanes along the boundary lines were mowed and the sprouts and brush were burned.

Aqueducts

The *Wachusett Aqueduct* was used on 291 days during the year, the total time in service amounting to 138 days, 0 hours and 52 minutes, and the quantity of water discharged from the Wachusett Reservoir into the aqueduct was 47,823,900,000 gallons, equivalent to an average draft of 131 024,000 gallons per day for the entire year, and all of the water was used to generate electric energy at the Wachusett power station before it was discharged into the aqueduct.

During the year the Westborough State Hospital pumped 84,475,000 gallons of water from the aqueduct terminal chamber in Marlborough, equivalent to an average use of 231,400 gallons per day.

On April 25, 3.37 acres of Water Works land in Clinton, acquired in 1896 for the tunnel portion of the aqueduct, were conveyed to Laurence Rauscher, subject to our easement restrictions, in exchange for a release of all claims that Rauscher may have acquired against the Commonwealth in connection with his purchase of land from Leora Wilder in 1915, including 1.68 acres of land taken by the Commonwealth from George Wilder in 1896 and for which no settlement had been made with Wilder.

During May and June the water system which supplies well water to four premises in the village of West Berlin through a 2-inch pipe line about 1¼ miles long was thoroughly overhauled at a cost of $312.

Brush, grass and weeds were mowed and disposed of for a distance of 10 miles along the aqueduct at a cost of about $292 per mile. Wire fences enclosing Water Works land in Southborough, adjacent to the Open Channel portion of the aqueduct, were constructed for 508 linear feet.

The *Weston Aqueduct* was in use 365 days, the total time in service being 362 days, 0 hours and 15 minutes, and the total quantity of water drawn from the Sudbury Reservoir into the aqueduct for delivery into the Weston Reservoir was 40,949,900,000 gallons equivalent to 112,191,507 gallons per day.

The *Sudbury Aqueduct* was in continuous use during the year, with the exception of portions of 6 days when the aqueduct was cleaned from Hollis Street to Course Brook waste weir and an inspection of the interior was made near the gas works in Framingham. The entire supply for this aqueduct, 7,441,400,000 gallons, was drawn from Framingham Reservoir No. 3, and of this quantity 382,100,000 gallons was sold to the town of Framingham, 12,500,000 was diverted into Lake Cochituate, and 7,046,800,000 gallons, equivalent to an average of 19,306,301 gallons per day, was delivered to Chestnut Hill distributing reservoir.

The aqueduct was cleaned from Hollis Street to Course Brook waste weir on May 17 to 20 due to condition of the aqueduct opposite the gas works in Framingham. It was again cleaned from the gas works to Course Brook waste weir on November 20, and on November 29 the aqueduct was shut down and an inspection made; this time conditions were much better and no cleaning was found necessary.

Ditches were dug along the aqueduct, one on the north side and one on the south side, opposite the gas works where the ground was saturated with a black, tarry substance. The ditches were dug as deep as possible and carried to the brook. The gas company has also pumped out and abandoned two old underground reservoirs, and stop-planks were put in place across the aqueduct at Course Brook waste weir to a height of 3.24 feet thus raising the water level in the aqueduct to further stop the seepage at the gas works. Two ventilators made of 8-inch cast-iron pipe were put in, one at the gas works and another 2,700 feet east of the works, and conditions are now much improved. There is practically no odor now at the gaging chamber where formerly the odor of gas and tar was very strong.

The roofs of the East and West siphon chambers were rebuilt at a total cost of $1,049.00.

The *Cochituate Aqueduct* was not used during the year but was kept in readiness for use in case of emergency.

All of the aqueduct lands and structures have been cared for in the usual manner.

Protection of the Water Supply

To prevent pollution of the water supply a Sanitary Engineer and seven watchmen have been employed throughout the year to inspect ice cutting and other operations and the condition of premises on the watersheds and to enforce the sanitary rules and regulations.

Water Division forces have operated the filter-beds on Beaman Street in West Boylston, where the sewage from the Worcester County Training School, which is occupied by about 35 persons, was purified throughout the year. The Gates Terrace filter-beds at Sterling Junction were operated continuously from February 15 to October 30 to purify the sewage from summer cottages in that vicinity. Sewage from the Eagleville Mill and the Mount Pleasant House in Holden, from the St. Marks and Fay schools and the Deerfoot Farm sausage factory and dairy at Southborough was purified by privately-owned and operated filter plants. The effluent from the Fay School filters has, in addition, been sterilized with chlorine by the school during 1935.

Surface water from thickly settled drainage areas of 525 acres in the village of Sterling, from 1,280 acres along the brook near Maple Street in Marlborough, from 700 acres along Pegan Brook and an intercepting ditch in Natick was purified by filters operated by Water Division forces before it flowed into the water supply, with the exception of an overflow of 31,958,000 gallons from Pegan Brook settling basin and 117,124,000 gallons from the intercepting ditch in Natick during the rainy season which was sterilized with chlorine before it entered Lake Cochituate. An overflow of sewage from manhole on Phelps Street and at the embankment east of Phelps Street in Marlborough was sterilized with chlorine.

At the Pegan Brook filters the pumping station was operated on 262 days and 193,637,000 gallons of water was pumped to the filters, an average of 530,512 gallons a day for the entire year. The cost of operating the station and caring for the grounds and filter-beds was $6,203.86 for labor, $412.68 for fuel and $123.66 for supplies and repairs, a total of $6,740.20, which is $34.81 per million gallons filtered. The fuel cost per million foot gallons was $0.20.

The cost of protecting the water supply by filtration was $1,200.00 for the Wachusett, $5,258.01 for the Sudbury and $6,740.20 for the Cochituate watershed.

During the year 59,744 pounds of copper sulphate was applied to 22,190,000,000 gallons of water in a number of storage and distributing reservoirs as an algaecide to destroy microscopical organisms, including Anabaena, Chlamydomonas, Cryptomonas, Dinobryon, Monas, Synura and Uroglenopsis, which occurred in sufficient numbers to give the water an unpleasant taste and odor. Copper sulphate was applied to the water as follows: In the latter part of May, 2,250 pounds to 1,000,000,000 gallons in a portion of the Sudbury Reservoir and 305 pounds to 119,000,000 gallons in the Weston Aqueduct; early in June, 750 pounds to 258,000,000 gallons in the Weston Reservoir and 3,050 pounds to 1,065,000,000 gallons in Framingham Reservoir No. 3; later in June, 18,690 pounds to 7,916,000,000 gallons in the Sudbury Reservoir, 1,799 pounds to 737,000,000 gallons at the Sudbury power station, 8,010 pounds to 1,857,000,000 gallons in Spot Pond and 1,730 pounds to 706,000,000 gallons in the Bear Hill, Chestnut Hill and Fells reservoirs; in August, 640 pounds to 157,000,000 gallons in the Lawrence basin of Chestnut Hill Reservoir; early in October, 2,775 pounds to 1,070,000,000 gallons in Framingham Reservoir No. 3; in the latter part of October, 17,770 pounds to 6,649,000,000 gallons in Sudbury Reservoir and 1,975 pounds to 656,000,000 gallons in Chestnut Hill Reservoir. In these cases the amount of copper applied varied from a minimum of 2.24 pounds per million gallons of water to a maximum of 4.63 pounds per million gallons of water. The cost of the copper sulphate used as an algaecide during the year was $2,667.78.

All water drawn from the storage reservoirs for consumption during the year was sterilized with chlorine as follows: Water drawn from Framingham Reservoir No. 3 through the Sudbury Aqueduct was sterilized by the ammonia-chlorine process with the exception that no ammonia was used from November 14 to the end of the year; water drawn from the Sudbury Reservoir through the Weston Aqueduct and Weston Reservoir was sterilized with liquid chlorine at the screen chamber. The water drawn from Framingham Reservoir No. 3 was sterilized at the entrance to the Sudbury Aqueduct at Framingham Dam No. 1 from January 1 to March 1; at the West siphon chamber from March 1 to April 17, and at the new chlorinator building, constructed at a cost of $1,387 near Leland Street, from April 17 to November 14, the ammonia-chlorine process being used during these three periods, and from November 14 to the end of the year at the new station where chlorine alone was used. The total amount of ammonia and liquid chlorine used in this primary chlorination of the water supply was as follows: In the Sudbury Aqueduct 7,701

pounds of anhydrous ammonia and 1,856 pounds of ammonium sulphate, the equivalent of 1.36 pounds of anhydrous ammonia per million gallons, and 41,037 pounds of liquid chlorine, equivalent to 5.82 pounds per million gallons; at the Weston Reservoir screen chamber 189,225 pounds of liquid chlorine, equivalent to 4.72 pounds per million gallons. Portions of the water supply which had passed through open distributing reservoirs after the primary chlorination were again sterilized by secondary chlorination as follows: All the water pumped from Spot Pond for the northern high service, amounting to 4,594,000,000 gallons, was chlorinated at the Spot Pond pumping station and 9,375 pounds of liquid chlorine was used for this purpose, equivalent to 2.05 pounds per million gallons; with the exception of the period from March 6 to May 16, all of the water pumped from the Chestnut Hill Reservoir, amounting to 13,976,000,000 gallons, was sterilized at the pumping stations and 26,775 pounds of liquid chlorine was used for this purpose, equivalent to 1.91 pounds per million gallons. Beginning July 20 water drawn from the open Fisher Hill and Waban Hill reservoirs of the southern high service after storage therein was sterilized with calcium hypochlorite as bacterial analyses of the water, after storage in these reservoirs, gave unsatisfactory results. The only pollution that seemed possible in these cases however would be from the air or from birds as the water had already been sterilized twice and the reservoirs are so located on the tops of the hills that no water can drain into them from the surrounding area. Total expenditures for the materials used in sterilizing the water supply during 1935 was $12,911.26.

Improved brook channels, ditches, culverts and watering places were maintained in good order. The cost of maintaining 34 miles of drainage ditches on all of the watersheds was $7,515.00.

For the protection of the water supply, property was acquired as follows: In Holden the fee in 0.5 of an acre of land from Delia T. Miles on April 2; in Sterling easements in 0.24 of an acre of land from Theadora B. Jones and in 0.36 of an acre of land from Richard B. Lambert on June 8, in 0.63 of an acre of land from Antonio and Maria Cherubini on June 10 and 0.05 of an acre of land from owner (unknown) on July 18, and in Hopkinton the fee in 6.6 acres of land from S. Stearns Crooks on October 21.

The swimming pool constructed in 1934 under the provisions of Chapter 346 of the Acts of that year, by the Water Division on Water Works land on Salisbury Street in Holden at the site of the old Dawson Mill, was officially turned over to the town of Holden for operation and maintenance on June 17.

During 1935 the pond in the Rufus Putnam Memorial Park in Rutland was developed as a swimming pool under the provisions of said Chapter 346 of 1934 in co-operation with the town under the Federal Emergency Relief Administration, which provided about $1,500 for labor in addition to the $3,860 expended by the Water Division for labor and materials. The pool has an area of about 1.6 acres, a maximum depth of 6.5 feet and a shallow sand beach, 140 feet long and 30 feet wide to a depth of 3 feet.

The work of diverting the water of East Waushacum Pond in Sterling from the Wachusett watershed, as authorized by Chapter 346 of the Acts of 1934 was begun July 12, 1935 in co-operation with the town of Clinton under the Federal Emergency Relief Administration, which provided about $20,500 for labor in addition to $4,740.00 expended for materials and equipment by the Water Division, to December 2 when work, which was about two-thirds completed, was suspended with the expectation that it would be resumed later as a Federal Works Progress Administration project.

It is now necessary to draw all of the water used from the Wachusett Reservoir through the Sudbury Reservoir, and due to the increase in population and the resulting activities in the Sudbury watershed, it is now difficult to protect the water in the Sudbury Reservoir from pollution by the enforcement of the Sanitary Rules and Regulations alone. For this reason consideration is recommended of the plan suggested in 1925 for by-passing the waters of the Wachusett Reservoir around the Sudbury Reservoir by means of a tunnel.

Additional lands should also be purchased from time to time as required for the protection of the Wachusett supply.

During the year written permits were issued to 1760 inhabitants of the Metro-

politan Water District and of the towns in which certain Water Division reservoirs are located, giving them the right to fish from the shores of the reservoirs under conditions specified in the permits. Of these permits 708 were for fishing in the upper portion of the Wachusett Reservoir more than 2 miles above the outlet and the remainder were for fishing in Whitehall Reservoir, Lombard Mill Pond and Framingham Reservoir No. 2 from which no water was drawn for consumption.

Clinton Sewage Disposal Works

The works constructed under the provisions of Acts of 1898, Chapter 557, for disposing of the sewage of the town of Clinton, were operated 351 days during the year. The quantity of sewage pumped and disposed of averaged 1,447,000 gallons per day. The cost of operating the pumping station was $3,687.52, which is $7.26 per million gallons, equivalent to $0.145 per million foot gallons. The cost of operating the filters and intercepting sewer was $10,027.14, which is $19.75 per million gallons of sewage disposed of. On 14 days in March and April the works were idle because of the large amount of ground water that entered the sewers which, combined with the sewage, exceeded the capacity of the pump.

It was provided that these works should be transferred to the town of Clinton for maintenance and operation when the sewage of the town shall have outgrown the normal capacity of the South Branch of the Nashua River to properly dispose thereof. About twelve years ago Consulting Engineers were employed by the Commission to determine if the time had arrived when the works should be transferred to the town. The Consulting Engineers reported the opinion that the sewage of the town had at that time outgrown the normal capacity of the river to properly dispose thereof. March 7, 1924 the Attorney General was requested, in behalf of the Commission, to apply to the Supreme Judicial Court for a determination of the matters in controversy with respect to the transfer of the works to the town, and as no action has since been taken it is desirable that further consideration should now be given this subject.

Forestry

The plantings made during the year included 80,500 white, red and Austrian pines and 6,500 arbor vitae trees.

The total expenditure for forestry in 1935 was $28,157.13, of which $5,500 was expended for protecting the trees from insects. The expenditure for this purpose was much larger than usual because a large number of red pines were badly infested with the Abbott saw-fly.

Hydroelectric Service

The generation and sale of electric energy as a by-product in connection with the operation of the Metropolitan Water Works was provided for in Acts of 1895, Chapter 488. The Wachusett hydroelectric power station, constructed in 1911, is believed to be the first plant where a public water supply was utilized in this manner.

The hydroelectric power stations at the Wachusett Dam in Clinton and at the Sudbury Dam in Southborough are operated by the water drawn for water supply from the reservoirs above these dams.

During the year 15,292,924 kilowatt hours of electric energy was developed at the power stations.

The value of the energy delivered in 1935 at contract prices is $94,361.13 and deducting $55,143.82 the expenditures charged to the operation of both stations and the Water Division transmission line, there was a profit of $39,217.31.

Wachusett Station

The power station was operated on 291 working days during the year, being idle on only 12 days during the first half of the year on account of minor repairs and water requirements, and on Sundays and holidays. The statistics are as follows:

Total energy developed (kilowatt hours)	9,979,000	
Energy used at power station (kilowatt hours)	30,112	
Available energy (kilowatt hours)		9,948,888
Water used (gallons)		47,823,900,000
Average head (feet)		94.84
Energy developed per million foot gallons (kilowatt hours)		2.200
Efficiency of station (per cent)		70.01

Credits:		
Energy sold New England Power Company and Edison Electric Illuminating Company:		
9,757,249 kilowatt hours at $0.00625	$60,982.81	
Deduction of 2 per cent as provided in contract:		
195,145 kilowatt hours at $0.00625	1,219.66	
	$59,763.15	
Energy furnished Clinton Sewerage Pumping Station:		
191,639 kilowatt hours at $0.00625	1,197.74	
		$60,960.89
Charges:		
Superintendence	$1,778.96	
Labor, operating station	10,215.05	
Repairs and supplies	1,571.36	
Transmission line repairs and supplies	584.69	
	$14,150.06	
Taxes	4,575.00	
Administration, general supervision, interest and sinking fund	11,138.82	
		29,863.88
Profit		$31,097.01
Cost of available energy per thousand kilowatt hours		$3.002

Sudbury Station

The Sudbury power station was operated on 365 days during the year with three shifts, although on several days the station was shut down for a short period so that Weston Reservoir could be maintained at the proper elevation.

The statistics are as follows:		
Total energy developed (kilowatt hours)	5,412,160	
Energy used at power station (kilowatt hours)	68,124	
Available energy (kilowatt hours)		5,344,036
Framingham Reservoir No. 3 service:		
Water used (gallons)		13,014,700,000
Average head (feet)		64.43
Weston Aqueduct service:		
Water used (gallons)		40,934,600,000
Average head (feet)		38.37
Energy developed per million foot gallons (kilowatt hours)		2.246
Efficiency of station (per cent)		71.5
Credits:		
Energy sold Edison Electric Illuminating Company:		
5,344,036 kilowatt hours at $0.00625		$33,400.24
Charges:		
Superintendence	$1,708.29	
Labor, operating station	14,751.88	
Repairs and supplies	285.92	
	$16,746.09	
Taxes	2,318.80	
Administration, general supervision, interest and sinking fund	6,215.05	
		25,279.94
Profit		$8,120.30
Cost of available energy per thousand kilowatt hours		$4.730

Distribution Pumping Stations

At the five distribution pumping stations 23,142,579,414 gallons of water was pumped during 1935. This is 454,471,912 gallons less than was pumped in 1934.

The pumpage at the two stations at Chestnut Hill included 1,862,849 gallons for the low service and 17,211,091,697 gallons for the high service. The high service pumpage includes 47,206,000 gallons for a portion of the supply of the town of Brookline and 580,630,695 gallons which was repumped at the Hyde Park Station for the southern extra-high service.

At the Spot Pond Station 4,593,994,902 gallons was pumped for the northern high service and at the Arlington Station 754,999,271 gallons was pumped for the northern extra-high service.

By arrangement with the city of Newton 546,400,000 gallons of water was repumped from the southern high service between November 26, 1934 and November 26, 1935 by the city at its Ward Street booster station for use on the high lands in Belmont and Watertown where satisfactory service could not be furnished from the Chestnut Hill stations, and for this pumping the Commonwealth will pay the city $7,999.17.

The average engine duties at the Water Division stations based on plunger displacement and total fuel used at the stations, including heating and lighting the stations and also the garage and shop from Station No. 2 at Chestnut Hill, are as follows:

Chestnut Hill Station No. 1, 150,240,399 foot pounds per 100 pounds of oil and coal averaging 18,427 British thermal units per pound.

Chestnut Hill Station No. 2, 168,618,065 foot pounds per 100 pounds of oil averaging 18,427 British thermal units per pound.

Spot Pond Station, 112,376,696 foot pounds per 100 pounds of bituminous coal, averaging 14,660 British thermal units per pound.

Arlington Station, 104,074,261 foot pounds per 100 pounds of mixed bituminous and anthracite coal, averaging 14,280 British thermal units per pound.

Hyde Park Station, 70,278,541 foot pounds per 100 pounds of mixed bituminous and anthracite coal, averaging 14,170 British thermal units per pound.

At the beginning of the year there was 341 gross tons of bituminous coal, 29 gross tons of anthracite screenings and 25,225 gallons of oil on hand at the pumping stations, and the amount on hand at the end of the year was 1,060 gross tons of bituminous coal, 70 gross tons of anthracite screenings and 32,313 gallons of oil. During the year 2,985 gross tons of bituminous coal, 338 gross tons of anthracite screenings and 1,352,845 gallons of oil was burned at the stations.

A test to determine the overall boiler and oil burner efficiency was begun on boilers Nos. 20, 21 and 22 at Chestnut Hill Station No. 1 on March 11 but was not completed as the contractor for the oil-burning equipment was unable to obtain the guaranteed results with a single burner on each boiler. Two burners were then installed on each boiler and an efficiency test was made over a 24-hour period, beginning at 10 o'clock, A.M. on November 12. The results of this test were as follows:

Average barometric pressure,	30.13 inches of mercury or 14.8 pounds per square inch.
Average furnace draft,	0.17 of an inch of water.
CO_2 in gases leaving boilers,	11.8 per cent.
CO in gases leaving boilers,	0.1 per cent.
Average steam pressure by gage at boiler,	179 pounds per square inch.
Average temperature of steam at boiler,	406° Fahrenheit.
Water evaporated,	397,470 pounds in 24 hours.
Water evaporated per boiler,	5,520 pounds per hour.
Water evaporated from and at 212° Fahrenheit,	15.42 pounds per pound of oil.
Heating value of oil,	18,718 British thermal units per pound.
Heating value of oil,	150,043 British thermal units per gallon (at 60° Fahrenheit).
Fuel oil supplied to boilers,	3,550 gallons (at 60° Fahrenheit).
Total heating value of oil supplied to boilers,	532,652,650 British thermal units.

Total heat added to water in boilers,	426,088,000 British thermal units.
Overall boiler and oil burner efficiency,	80 per cent.
Guaranteed efficiency,	80.7 per cent.

At Chestnut Hill Station No. 1 the dependent boiler-feed pump was removed from engine No. 16, dismantled and rebuilt and the main smoke flue at boiler No. 20 was extended. An underground sludge tank of 3000-gallon capacity was set back of Station No. 2 for temporary storage of refuse from the fuel oil tanks.

The electric lighting generator operated by the Pelton water wheel at Spot Pond Station was removed and shipped to the manufacturer for extensive repairs.

A new smoke flue was constructed for the boiler-room at the Arlington Station.

Boilers, machinery, piping and buildings at all of the pumping stations have been kept in first-class condition. At the shop located between the Chestnut Hill stations a large amount of work has been done by the blacksmith, the carpenter and the machinists for the Pumping Service and also for the other sections of the Water Division.

Distribution Reservoirs

The locations, elevations and capacities of the distribution reservoirs of the Metropolitan Water Works are shown by the following table:

Distribution Reservoirs and Locations	Elevation of High Water[1]	Capacity in Gallons
Low Service:		
Spot Pond, Stoneham and Medford	163.00	1,791,700,000
Chestnut Hill Reservoir, Brighton district of Boston	134.00	300,000,000
Weston Reservoir, Weston	200.00	200,000,000
Mystic Reservoir, Medford	157.00	26,200,000
Northern High Service:		
Fells Reservoir, Stoneham	271.00	41,400,000
Bear Hill Reservoir, Stoneham	300.00	2,450,000
Northern Extra High Service:		
Arlington Reservoir, steel tank, Arlington	442.50	2,000,000
Southern High Service:		
Fisher Hill Reservoir, Brookline	251.00	15,500,000
Waban Hill Reservoir, Newton	264.50	13,500,000
Forbes Hill Reservoir, Quincy	192.00	5,100,000
Forbes Hill Standpipe, Quincy	251.00	330,000
Southern Extra High Service:		
Bellevue Reservoir, steel tank, West Roxbury district of Boston	375.00	2,500,000
Total	–	2,400,680,000

[1]Elevation in feet above Boston City Base.

The Powder Horn Hill Reservoir of the city of Chelsea which had a capacity of 1,000,000 gallons with high-water line at elevation 196.6 was in service until March 30 and was then kept full of water for emergency use until December 6, and on December 19 was disconnected from the Metropolitan Water Works system and turned over to the Chelsea Park Department for removal in connection with the construction of a playground, the Venturi meter connection at the reservoir having been removed to Murray Street and Washington Avenue.

The Mystic and Forbes Hill reservoirs have been kept full of water for an emergency but were not used during the year.

The Bradlee basin of the Chestnut Hill Reservoir was in service throughout the year but the Lawrence basin was out of service from August 13 to November 15, because of objectionable condition of the water therein.

All other distribution reservoirs were in regular service throughout the year.

The standpipes on Arlington Heights, Bellevue Hill and Forbes Hill were in service throughout the year.

Distribution Pipe Lines

The new low service pipe line crossing the Mystic River at Wellington Bridge was put into service August 28.

The new 20-inch northern high service pipe line to reinforce the supply to Nahant and Swampscott was put into service November 27.

The new 48-inch low service pipe line from High Street at Governor's Avenue, through Riverside Avenue to connect with existing 48-inch main in Middlesex Avenue at Third Street in Medford, was put into service December 30.

At 1.15 o'clock A.M. on October 30 a break occurred in the 48-inch main in Beacon Street at Washington Street in Brookline which was laid by the city of Boston in 1880 and was acquired from the city in 1913. The line was entirely shut off at 1.55 o'clock A.M. after approximately 750,000 gallons of water had escaped into the street and flooded 22 basements of apartment houses and stores. The cost of work done by the general maintenance force in repairing the pipe line and other damage caused by the break was $2001.45.

During the year, 16 leaks were repaired in the distribution pipe lines at a cost of $673.69.

There are now 91 Venturi meters, varying in size from 6 to 60 inches in diameter, in the distribution pipe lines; 74 of these are on connections supplying various towns in the Metropolitan Water District; 5 are on the Weston Aqueduct supply mains; 1 between the southern high service and the southern low service mains; 5 at the Arlington, Chestnut Hill, Hyde Park and Spot Pond pumping stations; 1 at the city of Newton booster pumping station on Waban Hill; 2 on connections between the Weston Aqueduct supply mains and the local pipes in Washington Street, Newton; 1 on connection to the Fernald School in Waltham, and 2 on emergency connections with Cambridge and Wakefield distribution pipes. There are also 9 disc and 16 detector meters in use for measuring small quantities of water supplied at various places.

There are 8 pressure regulating valves connected with the system, 6 of which are in constant use for reducing pressure of water supplied to Revere, Swampscott and Winthrop.

Recording pressure gages have been maintained at 34 places on the distribution system and tables in the Appendix show the hydraulic grade at 17 of these stations as determined by the charts.

Pipes, specials and other materials and supplies required for maintaining and operating the pipe lines are kept on hand at the Glenwood pipe yard in Medford and the Chestnut Hill pipe yard in Brighton.

Auto trucks equipped with gate-operating attachments have been maintained with men on duty ready to operate them in case of emergency at any time during the day or night.

Consumption of Water

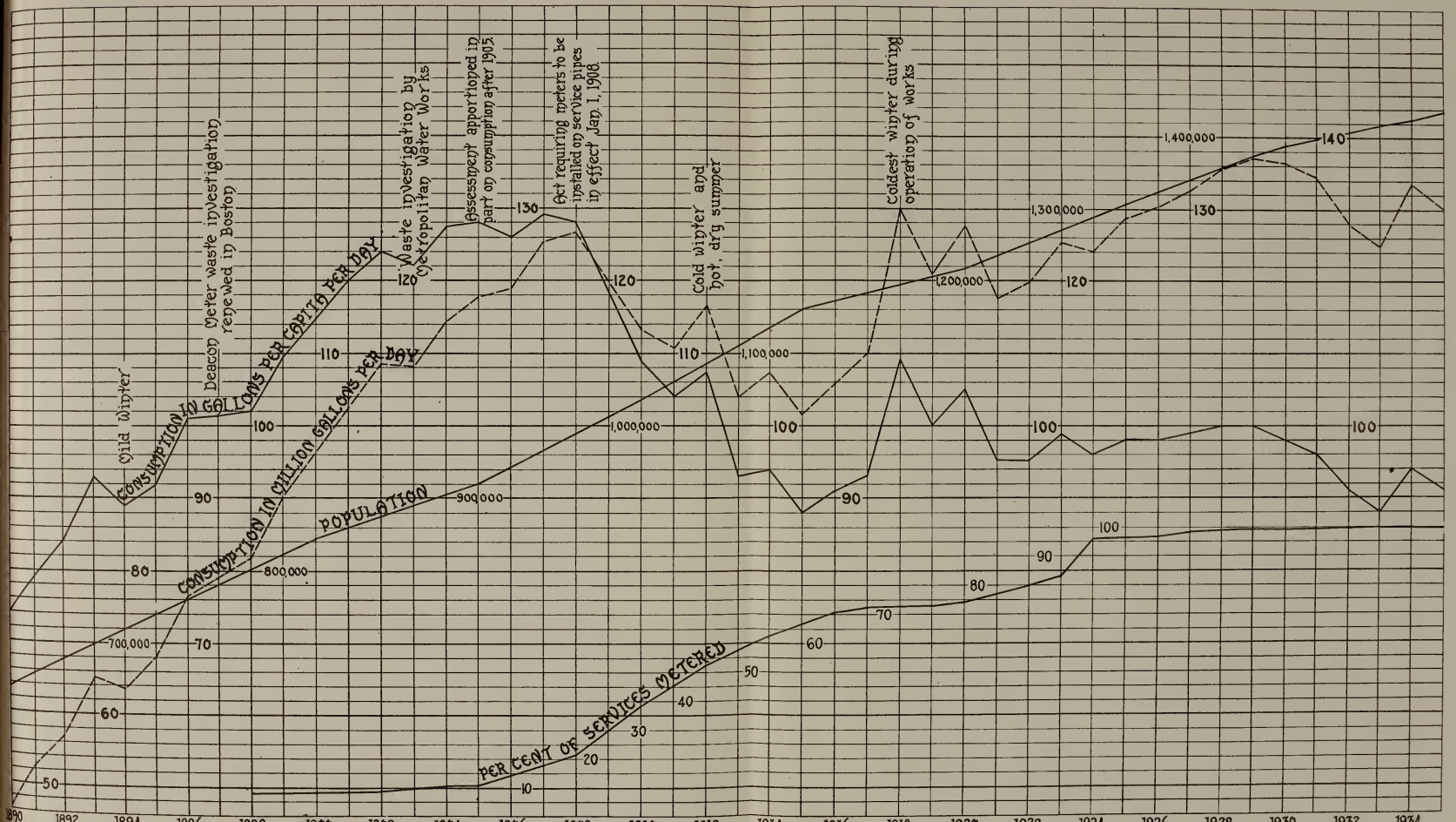
During the year 47,863,959,000 gallons of water was furnished to the 18 cities and towns that receive their entire supply from the Metropolitan Water Works. This is equivalent to an average daily consumption of 131,134,100 gallons and for the estimated population of 1,436,700 is at the rate of 91 gallons per capita.

The town of Brookline, with an estimated population of 50,620 used from its local source, 1,701,943,000 gallons of water, of which 378,552,000 gallons was supplied from elevation 375 and 1,323,391,000 gallons was supplied from elevation 250. In addition to this consumption from its local source, the town was supplied with 47,206,000 gallons of water from elevation 250 from the Metropolitan supply, making the total consumption of the town 1,748,149,000 gallons, equivalent to an average daily consumption of 4,792,200 gallons or 95 gallons per capita.

The city of Newton, with an estimated population of 66,230, used from its local source 1,744,900,000 gallons of water. In addition to this consumption from its local source, the city was supplied with 1,436,000 gallons of water from the Metropolitan supply, making the total consumption of the city 1,746,336,000 gallons, equivalent to an average daily consumption of 4,784,500 gallons or 72 gallons per capita.

The population, consumption of water and per cent of services metered in the Metropolitan Water District as supplied in 1935 and for the period from 1890 to 1935, inclusive, are shown graphically by the accompanying diagram.

POPULATION, CONSUMPTION OF WATER AND PER CENT OF SERVICES METERED IN THE METROPOLITAN WATER DISTRICT AS SUPPLIED IN 1935 FROM 1890 TO 1935



Note: Estimated population and consumption per capita given on diagrams published in previous annual reports are revised from time to time as regular census figures become available.

The average daily consumption of water in each of the municipalities in the [etropolitan Water District during 1934 and 1935 is as follows:

	Estimated Population, 1935	Average Daily Consumption				
		1934		1935		Decrease in Gallons
		Gallons	Gallons per Capita	Gallons	Gallons per Capita	
lington	38,800	2,212,400	58	2,218,000	57	5,600[1]
lmont	25,150	1,425,600	58	1,373,200	55	52,400
ston	821,560	89,256,700	110	87,868,000	107	1,388,700
elsea	42,340	3,479,700	81	3,329,300	79	150,400
erett	47,110	4,574,700	97	4,428,900	94	145,800
xington	10,950	668,100	63	703,000	64	34,900[1]
alden	57,200	4,011,700	70	3,923,300	69	88,400
edford	61,620	3,346,900	55	3,598,200	58	251,300[1]
elrose	24,380	1,705,600	71	1,567,800	64	137,800
ilton	18,330	945,300	53	891,300	49	54,000
ahant	1,760	268,800	154	258,500	147	10,300
iincy	77,430	4,995,500	65	5,054,600	65	59,100[1]
vere	35,280	2,269,500	64	2,264,100	64	5,400
merville	100,440	9,163,200	91	8,695,500	87	467,700
oneham	10,920	904,500	84	711,900	65	192,600
ampscott	10,490	937,300	90	893,200	85	44,100
atertown	35,930	2,286,000	64	2,160,200	60	125,800
nthrop	17,010	1,188,200	70	1,195,100	70	6,900[1]
strict Supplied	1,436,700	133,639,700	94	131,134,100	91	2,505,600
ookline	50,620	4,847,400	97	4,792,200	95	55,200
ewton	66,230	4,650,500	70	4,784,500	72	134,000[1]
Total District	1,553,550	143,137,600	93	140,710,800	91	2,426,800

[1]Increase.

The consumption by districts in 1935 as compared with 1934 is as follows:

	Gallons per Day 1935	Decrease from 1934	
		Gallons per Day	Percentage
w service district, embracing the low-service districts of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford, Somerville and Watertown	66,879,200	1,019,200	1.50
uthern high-service district, embracing Quincy, the high-service district of Boston, except East Boston, and portions of Milton and Watertown	46,025,000	1,124,000	2.38
uthern intermediate high-service district, embracing portions of Belmont and Watertown	1,479,200	26,900	1.79
rthern high-service district, embracing Melrose, Nahant, Revere, Stoneham, Swampscott, and Winthrop and the high-service districts of Chelsea, East Boston, Everett, Malden, Medford and Somerville	12,999,700	349,300	2.62
uthern extra high-service district, embracing the higher portions of Hyde Park, Milton and West Roxbury	1,670,500	79,900	4.56
rthern extra high-service district, embracing Lexington and the higher portions of Arlington and Belmont	2,080,500	93,700[1]	4.72[1]
District Supplied	131,134,100	2,505,600	1.87
ookline and Newton	9,576,700	78,800[1]	.83[1]
Total District	140,710,800	2,426,800	1.70

[1]Increase.

Water from Metropolitan Water Works Sources used Outside of the Metropolitan Water District

Places where Water is Used	Total Quantity (Gallons)	Average Quantity (Gallons per Day)	Amount Charged
Town of Rutland	80,131,700*a*	219,500	–
Town of Holden	66,071,700*b*	181,000	–
Town of Clinton	147,600,000	404 400	–
Westborough State Hospital	84,475,000	231,400	$2,534.25
Town of Westborough	76,000,000	208,200	–
Town of Southborough	26,767,000	73,300	–
Town of Ashland	75,566,600	207,000	–
Town of Hopkinton	28,341,500	77,600	–
Town of Framingham	563,310,000	1,543,300	15,633.76
Town of Natick	300,860,000	824,300	–
United States Army Reservation at Peddock's Island in Hull	586,000*c*	1,600	60.73
Portion of Town of Winchester	258,000*d*	700	–
Portion of Town of Saugus	1,492,000*e*	4,100	–
Metropolitan Parks, Middlesex Fells	5,671,000	15,500	–
Walter E. Fernald State School and Metropolitan State Hospital	154,433,000*f*	423,100	15,662.59

Notes: — Water was used throughout the year in all places except Clinton and Winchester.
The average daily use is in all cases figured on basis of 365 days.
*a*All but 403,900 gallons diverted from watershed.
*b*112,500 gallons diverted from watershed.
*c*Water supplied by the Commission through City of Quincy pipes, and by agreement revenue is divide in equal shares between the City and Commonwealth.
*d*The Town of Arlington supplies the water and pays the Commonwealth by an addition to its regul apportionment.
*e*The City of Melrose supplies the water and pays the Commonwealth by an addition to its regul apportionment.
*f*For fiscal year ending November 30.

Information regarding the installation of meters on service pipes by the mun cipalities supplied with water from the Metropolitan Water Works for the ye 1935 and other statistics are given in tables in the Appendix.

LEGEND

- PROPOSED RELIEF SEWER
- IMMEDIATE PROPOSED EXTENSION
- FUTURE PROPOSED EXTENSION

PROFILE

SECTION 115 · SECTION 114 · SECTION 113 · SECTION 112 · SECTION 111 · SECTION 108 · SECTION 107

Sta 147+31.90 · Sta 62+68.65 · Sta 42+72.21 · Sta 49+93.97 · Sta 56+14.65 · Sta 33+50

Tunnel · Tunnel · Tunnel · Tunnel

Boston & Maine R.R. · Lindenwood Rd · Montvale Ave · Hill St · Regulating Chamber · Washington St · Cross St · Lowell St · Swanton St · Main St · Barge St · Siphon-Aberjona River · Mystic Valley Parkway · Meeting House Brook · Playsted Rd · High St · Mystic Pl · Oak St · Willow St

End of Section 115 Sta 147+31.90 · End of Section 114 Sta 62+68.65 · End of Section 113 Sta 42+72.21 · End of Section 112 Sta 49+93.97 · End of Section 111 Sta 56+14.65 · End of Section 108 Sta 33+0 · End of Section 107 Sta 33+50

STONEHAM · WOBURN · WINCHESTER · MEDFORD

NORTH RESERVOIR · MIDDLE RESERVOIR · SOUTH RESERVOIR

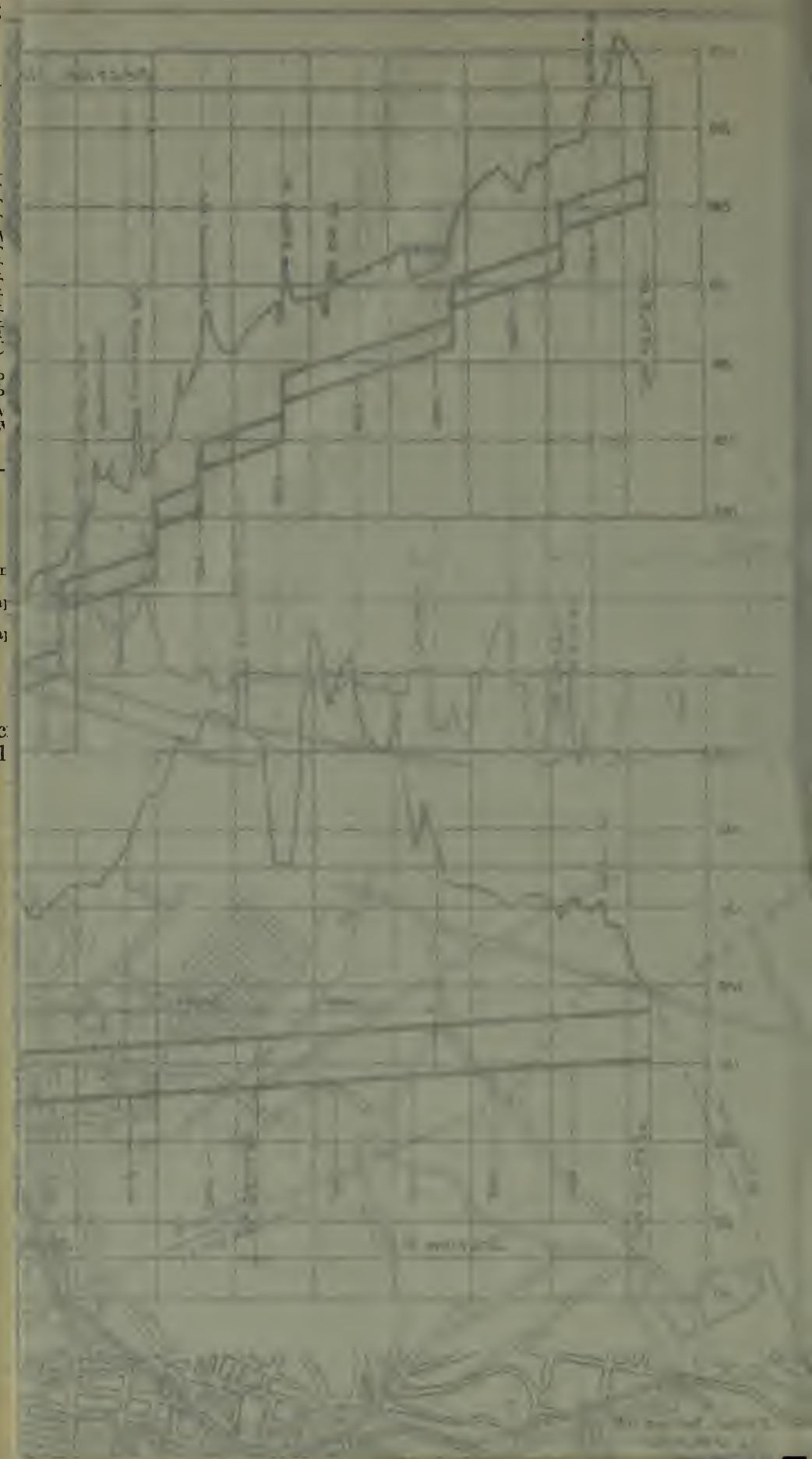
READING · Main St · West St · Oak St · Willow St · Montvale Ave · Lindenwood Rd · Hill St · Central St · Highland Ave · Aberjona River · Mystic Valley Parkway · Winthrop Ave · Broadway · Mystic Ave · Medford St

METROPOLITAN DISTRICT COMMISSION
SEWERAGE DIVISION

NORTH METROPOLITAN RELIEF SEWER

DECEMBER 31, 1935

0 1000 2000 3000 4000



VIII. Metropolitan Sewerage Districts

Areas and Populations

The populations of the districts, as given in the following table, are based on the nsus of 1935.

Table showing Ultimate Contributing Areas and Present Estimated Populations within the Metropolitan Sewerage Districts, as of December 31, 1935

	City or Town	Area (Square Miles)		Estimated Population	
North Metropolitan District	Arlington	5.20		39,060	
	Belmont	4.66		26,280	
	Boston (portions of)	3.45		95,000	
	Cambridge	6.11		119,000	
	Chelsea	2.24		42,010	
	Everett	3.34		46,980	
	Lexington	16.20		11,090	
	Malden	5.07		57,120	
	Medford	8.35		61,800	
	Melrose	3.73		24,490	
	Reading	9.82		10,900	
	Revere	5.86		35,250	
	Somerville	3.96		100,110	
	Stoneham	5.50		11,000	
	Wakefield	7.65		16,530	
	Winchester	5.95		13,510	
	Winthrop	1.61		17,030	
	Woburn	12.71		19,750	
			111.41		746,910
South Metropolitan District	Boston (portions of)	24.96		451,040	
	Braintree	13.44		17,410	
	Brookline	6.81		50,910	
	Canton	17.84		6,650	
	Dedham	9.66		15,420	
	Milton	12.59		18,510	
	Needham	12.50		12,040	
	Newton	16.88		66,320	
	Norwood	10.16		15,680	
	Quincy	12.56		77,950	
	Stoughton	16.23		8,540	
	Walpole	20.54		7,490	
	Waltham[1]	13.63		42,920[1]	
	Watertown	4.04		36,020	
	Wellesley	9.89		13,790	
	Weymouth	16.46		21,930	
			218.19		862,620
	Totals		329.60		1,609,530

[1]Including 2078 in the Metropolitan State Hospital and the Middlesex County Tuberculosis Hospital uthorized by Chapter 372 of the Acts of 1928 and Chapter 373 of the Acts of 1929.

Metropolitan Sewers

Sewers Purchased and Constructed and Their Connections

During the year there have been 0.011 miles of Metropolitan sewers built within he sewerage districts, so that there are now 142.592 miles of Metropolitan sewers.)f this total, 9.642 miles of sewers, with the Quincy Pumping Station, have been urchased from cities and towns of the districts. The remaining 132.950 miles f sewers and other works have been constructed by the Metropolitan Boards.

The locations, lengths and sizes of these sewers are given in appendix tables, ogether with other data referring to the public and special connections with the ystems.

Metropolitan Sewerage System

Construction

North Metropolitan Relief Sewer

Complaints were received by the Commission about the middle of June from inhabitants of Winchester to the effect that sewers belonging to this Commission were discharging into the public highways and the cellars of private property. Investigation disclosed that the Metropolitan sewer was flowing surcharged, that raw sewage was being deposited in the highways, that the cellar of one dwelling was filled with sewage to a depth of three feet and that the Aberjona River was seriously polluted. Further study of the case revealed that this condition had existed for some years past and that one manhole was discharging sewage through a permanent trough directly into the Aberjona River. The following picture was taken at the time of this investigation:

The Department of Public Health closed the bathing beach adjoining this river and reported that a relief sewer was necessary in order to reduce the pollution of this natural waterway. Further it was agreed that if it was necessary to provide an overflow in the relief sewer, said overflow should not discharge into the Aberjona River but should enter tidal waters below the Craddock Dam in Medford. The Commission called these conditions to the attention of His Excellency, the Governor who on July 9, 1935 sent a special message to the legislature requesting that an appropriation be made to commence the work of remedying this serious condition. As a result of this message the legislature enacted Chapters 478 and 495 authorizing the expenditure of $3,000,000 and directed the Metropolitan District Commission to construct sewers in the valleys of the Aberjona and Mystic Rivers located in Stoneham, Winchester, Medford and Woburn upon condition that said project be approved by the Emergency Public Works Commission and upon the further condition that a Federal grant be made so that the Commonwealth would not be required to bear more than $1,800,000 of the cost of the project.

On August 20, 1935, the project was submitted to the Emergency Public Works Commission and approved. Thereafter and on the same day, application for a grant of $1,350,000 was made to the Federal Emergency Administration of Public Works. On October 9, 1935, the Federal Emergency Administration of Public Works accepted the project and made a grant of $1,350,000 under the United States Emergency Relief Appropriation Act of 1935. On October 16, 1935, the Emergency Public Works Commission of Massachusetts received notice of this grant.

On August 20, 1935, field surveys and borings were started. The project was divided into seven sections to be known as the North Metropolitan Relief Sewer – Sections 107, 108, 111, 112, 113, 114 and 115. By the end of 1935 bids had been received on Section 107 and a description, summary of bids, and general plan follows.

North Metropolitan Relief Sewer — Section 107

This section is located in Medford and embraces construction of approximately 3350 feet of reinforced concrete sewer, 8½ feet high and 8½ feet wide together with an overflow into the Mystic River just below Craddock Dam, a three-pipe 54-inch cast iron siphon under the Mystic River between Main and Winthrop Streets and a structure for siphoning Meeting House Brook under the proposed sewer.

South Metropolitan Sewerage System

Hyde Park Branch Sewer — Section 31

Work was continued on this section which was started in September of 1934. Details of this contract were given in the Annual Report for 1934. The concrete work was finished about January 12, 1935, and the contract was completed May 31, 1935.

Sewerage Maintenance

The maintenance of the Metropolitan Sewerage System includes the operation of 10 pumping stations, the Nut Island screen-house and 142.592 miles of Metropolitan sewers, receiving the discharge from 2057.34 miles of town and city sewers at 1443 points, together with the care and study of inverted siphons under streams and in the harbor.

The regular work of this department, in addition to the operation of the pumping

Sewerage Overflowing into the Aberjona River, Winchester

THE COMMONWEALTH OF MASSACHUSETTS

METROPOLITAN DISTRICT COMMISSION

SEWERAGE DIVISION

CANVASS OF BIDS - NORTH METROPOLITAN RELIEF SEWER - SECTION 107 - DECEMBER 5, 1935

BIDDERS AND ADDRESSES	1 EARTH EXCAVATION ABOVE GRADE 25,000 CU. YDS.	2 EARTH EXCAVATION BELOW GRADE 1,500 CU. YDS.	4 EARTH EXCAVATION OUTSIDE OF TRENCH 500 CU. YDS.	5 GRAVEL REFILL 1,500 CU. YDS.	7 ROCK EXCAVATION 100 CU. YDS.	8 CONCRETE 6,000 CU. YDS.	9 REINFORCING RODS 250 TONS	10 PIPE UNDER DRAIN 3,350 LIN. FT.	11 BRICK MASONRY 20 CU. YDS.	12 REVETMENT PAVEMENT 150 CU. YDS.	13 WOOD SHEETING 250 M.FT B.M.	14 STEEL SHEETING 1,000 SQ. FT.	15 MINOR DRAINS 750 LIN. FT.	16 WOOD PILES 1,000 LIN. FT.	17 CAST IRON PIPE AND FITTINGS 215 TONS	18 MANHOLE FRAMES AND COVERS 8,000 LBS.	19 MISC. IRON 1,600 LBS.	20 COLD PATCH SURFACING 900 SQ. YDS.	22 SUPPORTING & MAINTAINING STRUCTURES, ETC.	23 GROUT 60 CU. YDS.	TOTALS
B. PERINI & SONS INC.	4.45	4.45	4.45	2.00	5.00	18.75	87.50	1.25	55.00	4.00	32.00	1.60	1.25	.50	100.00	.04	.08	1.25		15.00	345,001.00
FRAMINGHAM	111,250.00	6,675.00	2,225.00	3,000.00	500.00	112,500.00	21,875.00	8,375.00	1,100.00	600.00	13,000.00	1,600.00	937.50	500.00	21,500.00	320.00	98.00	1,125.00	41,110.00	900.00	
V. J. GRANOE CO.	4.90	5.25	2.50	3.00	5.00	15.00	65.00	1.50	40.00	6.00	40.00	.70	2.50	.50	90.00	.055 .035	.15	2.00		12.00	285,025.00
100 ACADEMY HILL RD. BOSTON	122,500.00	4,875.00	1,250.00	4,500.00	300.00	90,000.00	18,250.00	5,025.00	800.00	900.00	10,000.00	700.00	1,875.00	500.00	19,350.00	440.00 280.00	240.00	1,800.00	3,000.00	720.00	284,865.00
EDWARD M. MATZ	2.70	4.50	4.50	1.60	10.00	13.00	90.00	1.50	35.00	8.00	75.00	2.00	1.50	.40	75.00	.10	.10	1.00		15.00	258,110.00
25 ZAMORA ST. JAMAICA PLAIN	67,500.00	6,750.00	2,250.00	2,400.00	1,000.00	78,000.00	22,500.00	8,025.00	700.00	1,200.00	18,750.00	2,000.00	750.00	400.00	16,125.00	800.00	160.00	900.00	30,000.00	900.00	
J. N. FERGUSON CO.	5.16	3.00	5.00	2.00	6.00	11.00	120.00	1.00	35.00	6.00	40.00	1.50	1.50	1.25	85.00	.06	.15	2.00		20.00	230,420.00
289 CHAPMAN ST. PROVIDENCE, R.I.	79,000.00	4,500.00	1,500.00	3,000.00	600.00	86,000.00	30,000.00	3,350.00	700.00	900.00	10,000.00	1,500.00	1,125.00	1,250.00	18,275.00	480.00	240.00	1,800.00	5,000.00	1,200.00	
V. BARLETTA CO.	5.25	5.00	2.00	2.00	5.00	12.00	75.00	1.00	40.00	4.00	55.00	1.25	2.00	1.00	100.00	.10	.10	2.00		25.00	229,010.00
10 WHIPPLE AVE. ROSLINDALE	81,250.00	4,500.00	1,000.00	3,000.00	500.00	72,000.00	18,750.00	3,350.00	800.00	600.00	8,750.00	1,250.00	1,500.00	1,000.00	21,500.00	800.00	160.00	1,800.00	5,000.00	1,500.00	
P. DE CRISTOFARO	3.50	5.00	5.00	4.00	5.00	10.00	70.00	2.00	35.00	2.00	50.00	2.00	1.00	1.00	80.00	.08	.08	1.00		15.00	224,826.00
38 GLENDOWER RD. ROSLINDALE	87,500.00	7,500.00	1,500.00	6,000.00	500.00	80,000.00	17,500.00	8,700.00	700.00	300.00	12,500.00	2,000.00	750.00	1,000.00	17,200.00	480.00	96.00	900.00	1,000.00	900.00	
COLEMAN BROS. CORP.	2.70	5.00	5.00	2.00	3.00	13.00	70.00	.60	30.00	5.00	50.00	1.50	1.00	1.00	90.00	.05	.08	1.25		20.00	218,013.00
245 STATE ST. BOSTON	67,500.00	7,500.00	2,500.00	3,000.00	500.00	78,000.00	17,500.00	2,010.00	600.00	450.00	12,500.00	1,500.00	750.00	1,000.00	19,350.00	400.00	128.00	1,125.00	500.00	1,200.00	
A. BARUFFALOI CO.	2.50	2.00	1.50	1.50	3.00	12.00	80.00	2.00	40.00	4.00	80.00	.75	2.00	.60	80.00	.05	.05	.75		20.00	207,145.00
52 POWDER HOUSE BLVD. W. SOMERVILLE	62,500.00	3,000.00	750.00	2,250.00	300.00	72,000.00	15,000.00	6,700.00	800.00	600.00	20,000.00	750.00	1,500.00	600.00	17,200.00	240.00	80.00	675.00	1,000.00	1,200.00	
A. O. OADDARIO	2.50	2.00	3.00	2.00	5.00	11.00	70.00	4.00	30.00	5.00	40.00	.05	1.00	1.00	75.00	.05	.10	1.50		25.00	202,325.00
13 AGNES AVE. NYOE PARK	62,500.00	3,000.00	1,500.00	3,000.00	500.00	68,000.00	17,500.00	13,400.00	1,000.00	750.00	10,000.00	50.00	750.00	1,000.00	16,125.00	240.00	160.00	1,350.00	2,000.00	1,500.00	
C. & R. CONSTRUCTION CO.	1.90	2.00	1.50	1.00	3.00	13.00	55.00	4.00	30.00	5.00	50.00	.40	1.50	.20	100.00	.05	.10	1.00		10.00	197,835.00
67 NARRISON ST. ROSLINDALE	47,500.00	3,000.00	750.00	1,500.00	300.00	78,000.00	15,750.00	13,400.00	600.00	750.00	12,500.00	400.00	1,125.00	200.00	21,500.00	400.00	160.00	900.00	500.00	600.00	
J. F. FITZGERALD CONST. CO.	1.78	2.00	1.60	1.50	3.50	10.88	87.00	.38	22.00	5.00	20.00	.65	.75	.60	85.00	.08	.05	1.00		14.00	169,883.50
214 ESSEX ST. BOSTON	44,500.00	3,000.00	800.00	2,250.00	350.00	84,080.00	21,750.00	1,876.00	440.00	750.00	5,000.00	650.00	562.50	600.00	18,275.00	480.00	80.00	900.00	2,700.00	840.00	

DRAWN BY

CHECKED BY

CONTRACT AWARDED TO J. F. FITZGERALD CONST. CO.

ations, has consisted of routine work of cleaning and inspecting sewers and siphons, ring for tide gates, outfall sewers, regulators and overflows, measuring flow in wers, inspection of connections to the Metropolitan sewers, and the care of pump- g stations and other buildings, grounds and wharves.

In addition to these regular duties, other work has been done by the maintenance nployees in this department as follows:

Deer Island Pumping Station

At this station a platform, over No. 4 Pumping Engine, to be used in connection ith the Holly Gravity System was furnished and erected by the American Archi- ctural Iron Company. A broken check valve on the discharge pipe from No. 2 umping Engine was replaced. The check valve on the discharge pipe from No. 4 umping Engine was inspected and found to be in good condition. New piston rods id new metallic packing were installed in the low pressure and intermediate linders of No. 2 Pumping Engine.

A new additional feed-water pump has been installed in the basement at the utheasterly end of the station building with drains to the pit to care for the drip.

The tenement in the locker building was renovated for the use of one of the power ant engineers. The steam pipe and electric wires from the large tenement house this locker building formerly ran in an underground box which in winter occasion- ly became flooded causing condensation of the steam and short circuiting of the iring and so interfering with the heating and lighting of the tenement. To remedy e difficulty these lines have been suspended above the ground on posts set in ncrete.

East Boston Pumping Station

At this station on Engine No. 1, new crosshead guides were installed. On Engine o. 2, new check valves in the feed line, a new air chamber, new crosshead guides, w discharge line and valves on the water pump, and a new packing ring and springs the cylinder head were installed; the crank pin was removed and fitted and the xes repaired. On Engine No. 3 a new cut-water was cast and bolted in place, the ell of the pump was reinforced with concrete where worn through, a sleeve was it on the shaft for a bearing for the quarter boxes and packing, the steady brace the pump shaft was rebabbitted, new crosshead guides were installed on the gh pressure cylinder, and the crosshead pin and boxes refitted; the steam end of the rculating pump was repaired, two new valve stems were installed on each of the w pressure and intermediate pressure cylinders, new packing was put in for the il rod and the piston rod of the intermediate pressure cylinder, and the salt water jection valve was repaired. On Engine No. 4 a new thrust bearing ring of babbitt etal was made and installed and a new cooling system for the bearing put in. New ds for the air pump were furnished, a new electric motor was put on the oil pump hich lubricates the thrust bearing and permanent staging supports made of annel iron were erected over the pump.

The lighting Engine No. 1 was furnished with a new piston rod.

On the Holly Gravity System, new piping was installed in the screen-house and w line and check valves provided, new brackets were put in to support the pipes the back of the boilers and a new piece of pipe about 20 ft. long was put into the op of the System above the roof of the Station. The feed water heater coil was paired and one old feed water pump replaced. The old feed water pump was bsequently repaired and connected up so it may be operated independently of the her two pumps. Cracked water ends of feed pumps for boilers No. 1 and No. 2 ere repaired by welding.

On boiler No. 1, the steam piping was renewed to the main steam line and a new low-off line and valve furnished. On boiler No. 2, a new valve bonnet was installed the main steam valve and a new safety valve, new check valve and new drip alve furnished. On boiler No. 3, the piping was renewed to the main line and a ew blow-off valve installed. On boiler No. 4, a new check valve and a new drip alve were furnished. On boiler No. 5, all piping to the main line was renewed. new blow-off valve and blow-off line were put in and welding done around the re door. On boiler No. 6, a new blow-off line and valve, a new drip valve and a ew check valve were installed and some welding done around the fire door.

The new 12 inch salt water suction line for the condenser supply was connected and

put in operation on October 17th. The old 10 inch line was taken up so far as it w practicable and the pipes will be cleaned and put in condition for future use.

Charlestown Pumping Station

The diameter of the crank pin No. 3 Pumping Engine at this station was increas by electrically welding a collar around it. The pin and boxes were then refitted a the engine and its attached condensing pump reconditioned. The steam lines fro Nos. 1 and 2 boilers were welded and the safety valves reseated. The flues over t northerly pair of boilers have been slung in readiness for the removal of the boile which are to be replaced. The contract for the new boilers was awarded on Octob 31, 1935.

Alewife Brook Pumping Station

The steam line valves at this station have been reseated and new piston rods ma and installed in the feed water and air pumps. The old blow-off pipe has be replaced by a new two-inch extra heavy brass pipe. A new piston and rings and new piston rod have been made and installed in the high pressure cylinder of No. Engine (Blake Pump). Improvements in heating and lighting have been made the barn connected with the Station in order to make a more comfortable field offi for our civil engineers working in the vicinity.

Reading Pumping Station

About 800 ft. of 1¼ inch pipe was laid from the end of the Wakefield water ma in Elm Street to the pumping station to furnish a summer water supply when times the well is dry. This pipe is only about one foot below the surface of t ground and is arranged so that it can be emptied in cold weather. An oil burn was installed in the heating plant and some additional radiation area provided.

Chelsea Maintenance Yard

All materials stored in the lot on the Chelsea side of Chelsea Creek were move and stored along the Eastern Avenue side of the lot, so as to be easily accessible and when they have to be removed on account of the construction of the new Brid over Chelsea Creek.

Winchester Maintenance Yard

An oil burner was installed in the heating plant. A new wooden fence was bui and painted on all sides of the yard except the Cross Street side where a new cha link fence with a sliding gate was erected. Leakage of water upon the furnace roo floor was corrected by means of a dry well for receiving the rain water from a dow spout at the rear of the building.

Shirley Gut Siphon

The Winthrop head-house manhole has been sealed with a concrete slab top t prevent the escape of unpleasant odors. A 6 inch cast-iron vent pipe running fro the interior of the head-house into the tide-water relieves any undue air pressure

Ward Street Pumping Station

All of the copper box roof-water conductor pipes at this station were renewed; t exterior window sashes and frames, exterior doors and all exterior pipes and grill were given one coat of paint. All the interior woodwork except the ceilings w washed and varnished. The installation of blowers in the fire doors of the boile was completed.

Nut Island Screen-house

An inspection was made of the ventilating tube in the chimney at this statio The mortar in the joints from the base to the entrance of the smoke flue was foun to be in such poor condition that it was necessary to repoint the entire interior su face within these limits. An entrance manhole was cut through the floor of the hous into the ventilating chamber below and a cast-iron frame and cover installed t permit ready access thereto in future. This work was done by the regular mai tenance force. The dwelling house owned by the Commission and occupied b F. M. Goodwin, the engineer in charge of the Nut Island Screen-house, was re shingled with asphalt shingles purchased in the fall of 1934. The unfavorab

ther and a shortage of suitable men made a postponement of the work necessary hat time.

contract for two new boilers was awarded on November 27, 1935.

Braintree-Weymouth Pumping Station

he pipe stack used in filling the fuel oil tanks at this station was moved to a new tion on the pipe line, six feet outside the wall of the Station. A short concrete k was laid and an outside wooden vestibule built to protect the main entrance. frame building formerly used by the field engineers as an office was rebuilt and rged by the maintenance carpenters to convert it into a garage for two cars.

Ward Street Maintenance Yard

he office, sheds, storehouses and interior fences were painted and the old lead er pipe from the pumping station replaced by about 300 feet of brass pipe laid three-inch vitrified clay duct.

Houghs Neck Maintenance Yard

he barn was repaired and the sides shingled over the old clapboards. The barn the sheds were painted.

Section 31 — Hyde Park Branch Sewer

ement concrete slabs were made by the maintenance force and installed as erings for the head-houses. The new 18 inch diameter City of Boston sewer nected with the upper end of this section was put into operation on June 28th.

Section 87 — Tremont Street, Brighton

he sidewalk, edgestone and gutter over the line of this section of the High-level er were rebuilt for a distance of about 409 feet due to settlement following the struction of the sewer.

Section 26 — Neponset Valley Sewer

he reinforcement of several hundred feet of the arch of this sewer in Nay's adows in Boston and Dedham, necessitated by the increased load to be imposed n it by a heavy gravel fill for a new State Highway, was begun by the Contractor the highway about May 15th and completed during the month of July under supervision.

GASOLINE IN PUBLIC SEWERS

uring the year the usual precautions have been maintained against the intro-tion of gasoline into the Metropolitan sewers. An inspector who covers both rth and South Metropolitan Sewerage Districts has been employed. His duties to see that all newly constructed garages or other gasoline-using establishments supplied with a proper gasoline separator and also to see that these separators kept in working condition.

uring the year 1935 the number of permits issued by the municipalities in the verage Districts for the construction of garages and other places where gasoline sed was 241. Each of these permits necessitates an examination by our inspector. ny of them are attended to through the mails and do not require a personal visit. its are made, however, to all locations where a connection is to be made with the blic sewerage system and to such places as do not respond to the return postal ds sent out. During the year 18 such places were connected with the sewers that pty into the Metropolitan Systems. At the present time there are according to r records 1700 garages and other establishments where gasoline is used connected h the local sewerage systems which discharge into the Metropolitan sewers.

This system of inspection has improved the gasoline situation in regard to the nger to the sewers. Occasionally odors of gasoline are detected in the sewers. ese are reported to the Department of Public Safety which alone has statutory trol of the distribution and handling of gasoline in the Commonwealth.

IX. Other Reports

Tables, statistics and financial statements relating to the several divisions are reto appended.

Respectfully submitted,

E. C. HULTMAN,
Metropolitan District Commissioner.

bruary 28, 1935.

PUMPING STATIONS

Capacities and Results

North Metropolitan System

Deer Island Pumping Station

At this station are four submerged centrifugal pumps with impeller whee 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corli type.
Contract capacity of 1 pump: 100,000,000 gallons, with 19-foot lift.
Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.
Average coal duty for the year: 56,100,000 foot pounds.
Average quantity raised each day: 82,900,000 gallons.
Maximum quantity raised per day: 150,000,000 gallons.

East Boston Pumping Station

At this station are four submerged centrifugal pumps, with impeller whee 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corli type.
Contract capacity of 1 pump: 100,000,000 gallons with 19-foot lift.
Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.
Average coal duty for the year: 62,400,000 foot pounds.
Average quantity raised each day: 80,900,000 gallons.
Maximum quantity raised per day: 148,000,000 gallons.

Charlestown Pumping Station

At this station are three submerged centrifugal pumps, two of them havi impeller wheels 7.5 feet in diameter the other 8.25 feet in diameter. They a driven by triple-expansion engines of the Reynolds-Corliss type.
Contract capacity of 1 pump: 60,000,000 gallons with 8 foot lift.
Contract capacity of 2 pumps: 22,000,000 gallons each, with 11-foot lift.
Average coal duty for the year: 56,100,000 foot pounds.
Average quantity raised each day: 42,400,000 gallons.
Maximum quantity raised per day: 69,300,000 gallons.

Alewife Brook Pumping Station

The pumping units in this station consist of one Andrews pump driven by compound marine engine, one Morris pump and Morris compound engine and specially designed engine of vertical cross-compound type having between th cylinders a centrifugal pump rotating on a horizontal axis.
Contract capacity of the Andrews pump: 4,500,000 gallons with 13-foot lift.
Contract capacity of Morris pump: 8,000,000 gallons with 15-foot lift.
Contract capacity of the special pump: 13,000,000 gallons with 13-foot lift.
Average coal duty for the year: 21,700,000 foot pounds.
Average quantity raised each day: 6,140,000 gallons.
Maximum quantity raised per day: 14,300,000 gallons.

Reading Pumping Station

At this station are two submerged centrifugal pumps, one of 2,500,000 gallo per 24 hours, and one of 4,000,000 gallons per 24 hours, capacity. These opera against a maximum head of 65 feet, and are actuated by vertical shafts direct connected with 75 and 100 horse-power motors.
Alternating current of 440 volts furnished by the town of Reading is used.
Average quantity pumped per 24 hours: 1,260,000 gallons.
Maximum quantity raised per day: 3,833,000 gallons.

South Metropolitan System

Ward Street Pumping Station

At this station are two vertical, triple-expansion pumping engines, of the Alli Chalmers type, operating reciprocating pumps, the plungers of which are 48 inch

diameter with a 60-inch stroke and one 50,000,000-gallon centrifugal pumping it actuated by a 500 H.P. Uniflow engine.
ntract capacity of 3 pumps: 50,000,000 gallons each, with 45-foot lift.
erage coal duty for the year: 78,700,000 foot pounds.
erage quantity raised each day: 33,900,000 gallons.
aximum quantity raised per day: 59,700,000 gallons.

Quincy Pumping Station

The plant at this station consists of one Lawrence centrifugal pump driven by a rtevant compound condensing engine, one Morris centrifugal pump driven by a rris compound condensing engine, and one DeLaval centrifugal pump driven a Fitchburg vertical uniflow engine.
ntract capacity of 3 pumps: Lawrence centrifugal, 10,000,000 gallons; Morris centrifugal, 10,000,000 gallons; DeLaval centrifugal, 15,000,000 gallons.
erage coal duty for the year: 33,500,000 foot pounds.
erage quantity raised each day: 7,300,000 gallons.
aximum quantity raised per day: 24,800,000 gallons.

Nut Island Screen-house

The plant at this house includes two sets of screens in duplicate actuated by small versing engines of the Fitchburg type. Two vertical Deane boilers, 80 horse-wer each, operate the engines, provide heat and light for the house, burn materials ercepted at the screens, and furnish power for the Hough's Neck pumping station.
erage daily quantity of sewage passing screens: 86,500,000 gallons.
aximum quantity passing screens per day: 230,000,000 gallons.

Hough's Neck Pumping Station

At this station are two 6-inch submerged Lawrence centrifugal pumps with tical shafts actuated by two Sturtevant direct-current motors.
The labor and electric energy for this station are supplied from the Nut Island reen-house, and as used at present it does not materially increase the amount coal used at the latter station.
erage quantity raised each day: 261,000 gallons.
aximum quantity raised per day: 484,000 gallons.

Squantum Pumping Station

At this station are two pumping units each consisting of a 10-inch submerged Laval centrifugal pump with vertical shaft actuated by a Crocker-Wheeler H.P. motor. Each unit is capable of lifting 4,000,000 gallons of sewage per 24 rs against a head of 46 feet.
The electric energy for this station is purchased from the Quincy Electric Light Power Company.
erage quantity raised each day: 131,700 gallons.

Braintree-Weymouth Pumping Station

At this station are two pumping units consisting of DeLaval centrifugal pumps uated by 150 H.P. direct connected Winton diesel engines, together with all essories appertaining thereto. Each unit is capable of lifting 15,000,000 gallons ewage per 24 hours against a head of 30 feet.

Average Daily Volume of Sewage lifted at Each of the Ten Metropolitan Sewerag Pumping Stations during the Year, as compared with the Corresponding Volumes for the Previous Year

Pumping Station	Average Daily Pumpage			
	Jan. 1, 1935 to Dec. 31, 1935	Jan. 1, 1934 to Dec. 31, 1934	Increase during the Year	
	Gallons	Gallons	Gallons	Per C
Deer Island	82,900,000	83,600,000	700,000*	0.8
East Boston	80,900,000	81,600,000	700,000*	0.8
Charlestown	42,400,000	42,100,000	300,000	0.7
Alewife Brook	6,140,000	6,350,000	210,000*	3.3
Reading	1,260,000	1,089,000	171,000	15.7
Quincy	7,300,000	6,800,000	500,000	7.3
Ward Street (actual gallons pumped)	33,900,000	31,500,000	2,400,000	7.6
Hough's Neck	261,000	256,000	5,000	1.9
Squantum	131,700	114,100	17,600	15.4
†Braintree-Weymouth				

*Decrease.

†Pumping on 117 days only in 1935 averaged about 948,000 gallons per day. The average daily i during the year was about 304,000 gallons.

Metropolitan Sewerage Outfalls

The Metropolitan Sewerage Districts now have outfalls in Boston Harbo five points, two of which may discharge sewage from the North District and t from the South District.

During the year the sewage of the North District has been discharged wl through the outlet located near Deer Island light. The other outfall of this sy is closed by a cast-iron cover which can easily be removed.

Of the outfalls of the South District two extend for a distance exceeding one from the shore of Nut Island, Quincy, and the third one, called an emergency ou extends about 1,500 feet from the same. It was necessary to discharge se through this outfall 196 hours during the year.

During the year the average flow through the North Metropolitan District ou at Deer Island has been 82,900,000 gallons of sewage per 24 hours, with a maxi rate of 150,000,000 gallons during a stormy period in April, 1935. The amou sewage discharged from the North Metropolitan District averaged 119 gallon day for each person, taking the estimated population of the District contrib sewage. If the sewers in this District were restricted to the admission of se proper only, this per capita amount would be considerably decreased.

In the South Metropolitan District an average of 86,500,000 gallons of se per 24 hours has passed through the screens at the Nut Island Screen-house an been discharged from the outfalls into the outer harbor. The maximum ra discharge per day which occurred during a stormy period in April, 1935, 230,000,000 gallons. The discharge of sewage through these outfalls represent amount of sewage contributed by the South Metropolitan District, which w the rate of 134 gallons per day per person of the estimated number contrib sewage in the District.

Material Intercepted at the Screens

The material removed from the sewage at the screens of the North Metrop Sewerage Stations consisting of rags, paper and other floating materials, has d the year amounted to 1889 cubic yards. This is equivalent to 1.69 cubic fe each million gallons of sewage pumped at Deer Island.

The material removed from the sewage at the screens of the South Metrop Sewerage Stations amounted to 4611 cubic yards, equal to 3.94 cubic feet per m gallons of sewage delivered at the outfall works at Nut Island.

Studies of sewage flows in the Metropolitan sewers and siphons indicate tha are free from deposit.

Appendix No. 1

FINANCIAL STATEMENT

of the

METROPOLITAN DISTRICT COMMISSION

For the Year Ending November 30, 1935

Construction

	Condition of Fund as of Dec. 1, 1934	Amount available 1935	Expended 1935	Balance Dec. 1, 1935
Parks Division				
tropolitan Parks Construction Fund, eries I	$9,093.043.96			
eipts	198,942.81			
	$9,291,986.77			
pended to Dec. 1, 1934	9,264,694.59	$27,292.18	–	$27,292.18
tropolitan Parks Construction Fund, eries II	$9,614,780.63			
eipts	29,934.16			
	$9,644,714.79			
pended to Dec. 1, 1934	9,642,663.71	$2,051.08	–	$2,051.08
thern Traffic Route Construction Fund	$3.000,000.00			
eipts	18,140.30			
	$3,018,140.30			
pended to Dec. 1, 1934	2,952,860.07	$65,280.23	$735.49	$64,544.74
rles River Basin Improvements Chapter 71, Acts of 1929	$2,305,000.00			
Chapter 179, Acts of 1931	25,000.00			
erest	129,110.90			
	$2.409,110.90			
pended to Dec. 1, 1934	2,054,445.62	$354,665.28	$51,049.07	$303,616.21
h House, Charles River, Chapter 384, Acts f 1934	$30.000.00			
pended to Dec. 1, 1934	14,362.39	$15,637.61	$15,597.26	*$40.35
d in Saugus and Wakefield, Chapter 384, cts of 1934	$40,000.00			
pended to Dec. 1, 1934	–	$40,000.00	$39,015.75	$984.25
provement of Land, Old Colony Parkway, Chapter 497, cts of 1935		$100,000.00	$39.84	$99,960.16
Sewerage Division				
ropolitan Sewerage Construction Fund, orth System:				
ials:				
ew Mystic Valley Main Sewer Chapter 184, Acts of 1927	$450,000.00			
Chapter 381, Acts of 1931	20,482.25			
	$470,482.25			
xpended to Dec. 1, 1934	456,814.23	$13,668.02	$4,164.38	$9,503.64
sachusetts State Project D-101 P.W.A. Docket 1098		$3,000,000.00	$11,754.37	$2 988,245.63
ropolitan Sewerage Construction Fund, outh System:				
eral	$10,005,151.75			
eipts	24,599.61			
	$10,029,751.36			
ended to Dec. 1, 1934	10,026,569.58	$3,181.78	–	$3,181.78
ials:				
ew Neponset Valley Sewer Chapter 384, Acts of 1928	$2,365,000.00			
Chapter 384, Acts of 1934	10,000.00			
	$2,375,000.00			
xpended to Dec. 1, 1934	2,371,302.26	$3,697.74	$2,911.57	$786.17
avity Drainage, City of Quincy, Chapter 240, Acts of 1928	$150,000.00			
xpended to Dec. 1, 1934	142,831.40	$7,168.60	$239.51	$6,929.09
Less amount transferred to Hyde Park Branch Sewer				5,000.00
everted.				$1,929.09

Construction — Continued

	Condition of Fund as of Dec. 1, 1934	Amount available 1935	Expended 1935	Balance Dec. 1, 19
Sewerage Division — *Continued*				
Sewers in Quincy, Weymouth and Braintree				
Chapter 398, Acts of 1930	$600,000.00			
Expended to Dec. 1, 1934	546,463.96			
		$53,536.04	$12,492.60	$41,043.
Boston-Newton Main Sewer, Chapter 205, Acts of 1932	$100,000.00			
Expended to Dec. 1, 1934	86,045.13			
		$13,954.87	$8,659.52	$5,295.
Hyde Park Branch Sewer, Chapter 384, Acts of 1934	$20,000.00			
Transferred from Gravity Drainage, City of Quincy	5,000.00			
	$25,000.00			
Expended to Dec. 1, 1934	13,729.60			
		$11,270.40	$10,184.13	$1,086.
Water Division				
Metropolitan Water Construction Fund:				
General	$43,070,000.00			
Receipts	332,747.27			
	$43,402,747.27			
Expended to Dec. 1, 1934	43,347,937.30			
		$54,809.97		
Receipts, year ending Nov. 30, 1935		745.83		
		$55,555.80	**$351.29	$55,907.
Specials:				
Property for Protection of Water Supply	$190,000.00			
Expended to Dec. 1, 1934	185,303.58			
		$4,696.42	$291.86	*$4,404.
Improvements, Supply Mains, etc.				
Chapter 245, Acts of 1931	$400,000.00			
Chapter 170, Acts of 1932	350,000.00			
Chapter 174, Acts of 1933	250,000.00			
Chapter 162, Acts of 1934	300,000.00			
	$1,300,000.00			
Expended to Dec. 1, 1934	999,582.28			
		$300,417.72		
Chapter 249, Acts of 1935		300,000.00		
		$600,417.72	$412,415.80	$188,001.
Improvements, Belmont, Watertown and Arlington:				
Chapter 384, Acts of 1934	$50,000.00			
Expended to Dec. 1, 1934	9,756.97			
		$40,243.03		
Chapter 249, Acts of 1935		150,000.00		
		$190,243.03	$111,712.73	$78,530.
Bathing Facilities:				
Chapter 384, Acts of 1934	$12,000.00			
Expended to Dec. 1, 1934	2,988.34			
		$9,011.66	$7,661.60	$1,350.
Miscellaneous				
Parks Division				
Metropolitan Parks Expense Fund:				
Total receipts to Dec. 1, 1934	$4,245,361.35			
Total expenditures to Dec. 1, 1934	4,220,328.48			
		$25,032.87	†$12,663.98	$12,368.
Less amount to be held a/c outstanding liabilities				3,122.
				††$9,245.
Metropolitan Parks Fund, Special, Balance transferred from Metropolitan Parks Expense Fund Chapter 266, Acts of 1934		$9,245.97		
Receipts year ending Nov. 30, 1935		123,189.94		
		$132,435.91	–	$132,435.
Metropolitan Parks Trust Fund:				
Total receipts to Dec. 1, 1934	$41,902.29			
Total expenditures to Dec. 1, 1934	38,140.11			
		$3,762.18		
Receipts year ending Nov. 30, 1935		124.38		
		$3,886.56	–	$3,886.

*Reverted.
**Credit.
†Liabilities incurred prior to Dec. 1, 1934.
††Transferred to Metropolitan Parks Fund, Special.

Miscellaneous — Continued

	Condition of Fund as of Dec. 1, 1934	Amount available 1935	Expended 1935	Balance Dec. 1, 1935
Parks Division — *Continued*				
dwin U. Curtis Memorial Trust Fund:				
Total receipts to Dec. 1, 1934	$1,852.37			
Total expenditures to Dec. 1, 1934	237.59			
		$1,614.78		
Receipts year ending Nov. 30, 1935		63.00		
		$1,677.78	–	$1,677.78
rainage in Everett, Malden and Revere:				
Total deposited by above cities	$70,000.00			
Expended to Dec. 1, 1934	61,497.50			
		$8,502.50	–	$8,502.50
mergency Public Works Commission — Construction Massachusetts State Project D-1 P.W.A. Docket 4478:				
(Metropolitan District Commission — Wellington Bridge)	$956,000.00			
Expended to Dec. 1, 1934	112,367.63			
		$843,632.37	$382,267.08	$461,365.29

Maintenance

Parks Division

etropolitan Parks Maintenance Fund:				
General:				
Chapter 249, Acts of 1935		$1,050,140.00		
Chapter 497, Acts of 1935		69,140.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		7,182.78		
		$1,126,462.78	$1,054,538.97	$71,923.81
Specials:				
Band Concerts:				
Chapter 249, Acts of 1935		$20,000.00	$19,873.71	*$126.29
Aberjona River Improvements:				
Chapter 384, Acts of 1934	$6,000.00			
Expended to Dec. 1, 1934	3,016.65			
		$2,983.35	$628.90	$2,354.45
Investigations Relative to Certain Ways, Bridges, Beaches, etc.:				
Chapter 497, Acts of 1935		$5,000.00	$4,972.76	*$27.24
etropolitan Parks Maintenance Fund, Boulevards:				
General:				
Chapter 249, Acts of 1935		$572,690.00		
Chapter 497, Acts of 1935		28,000.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		9,130.58		
		$609,820.58	$570,747.03	$39,073.55
Specials:				
Extension of Quincy Shore Reservation:				
Chapter 343, Acts of 1927 (Reappropriated Chapter 386, Acts of 1929)	$35,000.00			
Expended to Dec. 1, 1934	34,904.40			
		$95.60	–	$95.60
Land, Boulevard, Newburyport Turnpike to Lynn Woods Parkway:				
Chapter 426, Acts of 1930	$10,000.00			
Expended to Dec. 1, 1934	6,770.93			
		$3,229.07	–	$3,229.07
Circumferential Highway:				
Chapter 398, Acts of 1926	$115,000.00			
Chapter 386, Acts of 1929	159,000.00			
Chapter 115, Acts of 1930	371,000.00			
Chapter 460, Acts of 1931	28,947.37			
Chapter 170, Acts of 1932	21,052.63			
	$695,000.00			
Expended to Dec. 1, 1934	685,790.92			
		$9,209.08	–	$9,209.08
Boulevard, Fellsway to Mystic Avenue, Medford:				
Chapter 460, Acts of 1931	$189,473.68			
Chapter 170, Acts of 1932	210,526.32			
Chapter 384, Acts of 1934	100,000.00			
	$500,000.00			
Expended to Dec. 1, 1934	468,766.51			
		$31,233.49		
Chapter 497, Acts of 1935		20,000.00		
		$51,233.49	$41,522.76	$9,710.73

*Reverted.

Maintenance — Continued

	Condition of Fund as of Dec. 1, 1934	Amount available 1935	Expended 1935	Balance Dec. 1, 19
Parks Division — *Continued*				
Metropolitan Parks Maintenance Fund, Boulevards: (*Continued*)				
Specials: (*Continued*)				
Brookline-Newton Boulevard:				
Chapter 460, Acts of 1931	$231,578.95			
Chapter 170, Acts of 1932	168,421.05			
	$400,000.00			
Expended to Dec. 1, 1934	284,562.37			
		$115,437.63	$13,555.09	$101,882.5
Brush Cutting, Newburyport Turnpike to Lynn Woods Parkway:				
Chapter 307, Acts of 1932	$10,000.00			
Expended to Dec. 1, 1934	8,985.80			
		$1,014.20	–	*$1,014.2
Traffic Circle, Fellsway West:				
Chapter 307, Acts of 1932	$30,000.00			
Expended to Dec. 1, 1934	28,822.91			
		$1,177.09	–	*$1,177.0
Storm Damages at Winthrop:				
Chapter 162, Acts of 1934	$22,000.00			
Expended to Dec. 1, 1934	21,924.41			
		$75.59	–	*$75.5
Resurfacing Boulevards and Parkways:				
Chapter 249, Acts of 1935		$275,000.00		
Less amount transferred to Subsidiary account:				
Chapter 383, Acts of 1935		30,000.00		
Reappropriated		2,682.87		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		14,321.10		
		$262,003.97	$248,756.83	$13,247.1
Resurfacing Boulevards and Parkways Subsidiary — Parkway — Quincy and Braintree:				
Chapter 383, Acts of 1935		$30,000.00	$20,811.98	$9,188.0
Charles River Basin Maintenance Fund:				
Chapter 249, Acts of 1935		$243,645.00		
Chapter 497, Acts of 1935		3,300.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		5,665.52		
		$252,610.52	$217,602.41	$35,008.1
Metropolitan Parks Maintenance Fund, Nantasket:				
Chapter 249, Acts of 1935		$93,930.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		1,653.87		
		$95,583.87	$94,076.01	$1,507.8
Metropolitan Parks Maintenance Fund, Wellington Bridge:				
Chapter 249, Acts of 1935		$19,330.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		55.86		
		$19,385.86	$18,953.23	$432.6
Maintenance of Bunker Hill Monument:				
Chapter 249, Acts of 1935		$11,830.00	$11,203.46	$626.5
Sewerage Division				
Metropolitan Sewerage Maintenance Fund, North System:				
Chapter 249, Acts of 1935		$373,405.00		
Chapter 497, Acts of 1935		5,870.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		25,418.37		
		$404,693.37	$364,932.88	$39,760.4
Metropolitan Sewerage Maintenance Fund, South System:				
Chapter 249, Acts of 1935		$279,657.00		
Chapter 497, Acts of 1935		6,680.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		12,331.20		
		$298,668.20	$263,387.34	$35,280.8
Water Division				
Metropolitan Water Maintenance Fund:				
General:				
Chapter 249, Acts of 1935		$952,256.21		
Chapter 497, Acts of 1935		1,250.00		
Balance brought forward from 1934 appropriation to cover 1934 expenditures on 1935 books		22,124.06		
		$975,630.27	$940,872.62	$34,757.6

*Reverted.

Maintenance — Continued

	Condition of Fund as of Dec. 1, 1934 Condition of	Amount available 1935	Expended 1935	Balance Dec. 1, 1935
Water Division — *Continued*				
Metropolitan Water Maintenance Fund: (*Continued*)				
Special:				
Additional Pumping Equipment:				
Chapter 245, Acts of 1931	$50,000.00			
Chapter 170, Acts of 1932	50,000.00			
Chapter 174, Acts of 1933	50,000.00			
	$150,000.00			
Expended to Dec. 1, 1934	147,981.45			
		$2,018.55	–	$2,018.55

Receipts — Year Ended November 30, 1935

Parks Division

Credited to:		
Metropolitan Parks Fund Special	$123,189.94	
Metropolitan Parks Maintenance Fund, General	33,667.29	
Metropolitan Parks Maintenance Fund, Boulevards	643.81	
General Revenue	2,782.70	
Charles River Basin Maintenance Fund	1.45	
Northern Traffic Route Construction Fund	400.00	
		$160,685.19

Sewerage Division

Credited to:		
Metropolitan Sewerage Sinking Fund, North System	$650.00	
Metropolitan Sewerage Maintenance Fund, North System	6,638.90	
Metropolitan Sewerage Maintenance Fund, South System	6,728.92	
Metropolitan Sewerage Interest Fund, South System	4.00	
		$14,021.82

Water Division

Credited to:		
Metropolitan Water Loan Interest Fund	$20.00	
Metropolitan Water Construction Fund	745.83	
Metropolitan Water Sinking Fund	140,051.78	
Metropolitan Water Maintenance Fund	16,191.40	
		$157,009.01
Total Receipts		$331,716.02

Appendix No. 2

Table 1

The following is a record of the traffic through locks and drawbridges during the year

Charles River Dam Lock and Drawbridge

Number of openings of highway drawbridge	1,810
Number of openings of lock	3,933
Number of vessels	2,325
Number of small boats	5,256
Number of rafts	1
Coal (tons)	124,757
Sand (tons)	132,603
Gravel (tons)	39,046
Oil (bbls.)	637,385
Oil (gals.)	10,082,875
Coke (tons)	14,243
Granite (tons)	994
Mud (tons)	2,300
Lumber (ft. B. M.)	103,000

Neponset River Drawbridge

Number of openings	311
Number of vessels	503

Dorchester Bay Drawbridge

Number of openings	554
Number of vessels	610

Wellington Drawbridge

Old Draw

Number of openings	52
Number of vessels	73

New Draw

Number of openings	15
Number of vessels	26

Malden River Drawbridge

Number of openings	90
Number of vessels	108

Cradock Bridge Lock

Number of openings	449
Number of boats through lock	498
Number of boats over rolls	122

Saugus River Drawbridge

Number of openings	352
Number of vessels	522

General Edwards Drawbridge

Number of openings	83
Number of vessels	85

Mystic River Drawbridge

No openings for marine traffic.

Table 4

Lengths of Roads and Bridle Paths in Reservations not Open to Motor Vehicles

	Miles
Blue Hills Reservation	63.08
Middlesex Fells Reservation	21.90
Stony Brook Reservation	19.60
Beaver Brook Reservation	.22
Charles River Reservation	.89
Hammond Pond Parkway	2.00
	107.69

Table 5

Electric Street Lights on Parkways and Reservations

	Lights	
Alewife Brook Parkway (26–600 c.p., 1–1500 c.p.)	27	
Blue Hills Parkway (600 c.p.)	59	
Blue Hills Reservation, Hillside Street (80 c.p.)	14	
Charles River Dam, Reservation (1500 c.p.)	9	
Charles River Dam, Roadway (1000 c.p.)	20	
Charles River Reservation, Embankment Road (2–100 c.p., 17–600 c.p.)	19	
Charles River Reservation, Embankment (250 c.p.)	80	
Charles River Reservation, North Beacon Street Bridge (4–1500 c.p., 9–1000 c.p.)	13	
Charles River Reservation, Soldiers Field Road (63–1000 c.p., 54–1,500 c.p.)	117	
Clarence R. Edwards Bridge (1000 c.p.)	14	
Dorchester Bay Bridge (1500 c.p.)	8	
Fresh Pond Parkway (15–250 c.p.)	15	
Furnace Brook Parkway (600 c.p.)	58	[1]
Harvard Bridge (600 c.p.)	24	
Larz Anderson Bridge (100 c.p.)	24	
Lynn Fells Parkway (600 c.p.)	28	[2]
Lynn Shore Reservation (4–1000 c.p., 44–600 c.p.)	48	[3]
Lynnway (1–1000 c.p., 10–600 c.p.)	11	
Memorial Drive (32–600 c.p., 213–250 c.p.)	245	
Middlesex Fells Parkway (7–1500 c.p., 263–600 c.p.)	270	[4]
Middlesex Fells Reservation (2–80 c.p., 35–250 c.p., 21–600 c.p.)	58	[5]
Mystic Valley Parkway (1–250 c.p., 89–600 c.p.)	90	[6]
Nahant Beach Parkway (600 c.p.)	16	[7]
Nantasket Beach Reservation (1000 c.p.)	48	[8]
Neponset Bridge (600 c.p.)	16	
Neponset Valley Parkway (600 c.p.)	21	
Old Colony Parkway (49–1500 c.p., 2–1000 c.p.)	51	
Quincy Shore Boulevard (600 c.p.)	57	[9]
Revere Beach Parkway (600 c.p.)	190	[10]
Revere Beach Reservation (2–60 c.p., 1–250 c.p., 107–1500 c.p.)	110	[11]
River Street Bridge (250 c.p.)	8	
Weeks Bridge (100 c.p.)	24	
Western Avenue Bridge (250 c.p.)	8	

[1] Nineteen all night, except November 1 to March 31, until 1 A.M. Fourteen all night, April 1 to October 31.
[2] Seventeen all year until 1 A.M.
[3] Three 600 c.p. June 1 to December 1.
[4] Four 600 c.p. all year until 1 A.M.
[5] Two 80 c.p., thirty-five 250 c.p. and three 600 c.p. all year until 1 A.M.
[6] Ten 600 c.p. all night, except November 1 to March 31 until 1 A.M. Thirty-two 600 c. p. all year until 1 A.M.
[7] Four, June 1 to December 1.
[8] Twelve, June 1 to October 31. Fourteen in summer only.
[9] Forty-one all night, except November 1 to March 31 to 1 A.M. Ten all night, April 1 to October 31, Six all year until 1 A.M.
[10] Twenty-seven all night, April 1 to October 31.
[11] Twenty-seven 1500 c.p. all night, May 1 to October 31. Thirty-one 1500 c.p. to midnight, June 1 to September 30. One 60 c.p. all night, May 1 to September 30.

West Roxbury Parkway (27–600 c.p., 2–1000 c.p.)	29
Winthrop Parkway (14–250 c.p., 7–600 c.p.)	21
Winthrop Shore Reservation (600 c.p.)	23
Woburn Parkway (600 c.p.)	4
	1,877

Table 6

Miles of Seashore

	Mi
Lynn Shore	1.[illegible]
Nahant Beach	2.[illegible]
Revere Beach	2.[illegible]
Winthrop Shore	1.[illegible]
Nantasket Beach	1.[illegible]
Quincy Shore	2.[illegible]
Total	12.[illegible]

Lengths of Sea Walls

	Mi
Lynn Shore	1.[illegible]
Revere Beach at Northern Circle	.[illegible]
Revere Beach at Eliot Circle	.[illegible]
Revere Beach, shore protection, bathhouse shelter to Revere Street shelter	.[illegible]
Winthrop Shore, bridge to Great Head	1.[illegible]
Winthrop Shore, bridge to Grover's Cliff	.[illegible]
Revere Beach, shore protection, south of Northern Circle	.[illegible]
Quincy Shore Reservation, shore protection south of Webster Street	1.[illegible]
Quincy Shore Reservation, southerly end	.[illegible]
Nantasket Beach Reservation	.[illegible]
Winthrop Parkway, Revere and Winthrop, Broad Sound Avenue to Sewall Avenue	.[illegible]
Nahant Beach Parkway, north of Wilson Road	.[illegible]
Total	6.[illegible]

Miles of River Bank

	Mi
Charles River	33.[illegible]
Mystic River	8.[illegible]
Neponset River	15.[illegible]
Alewife Brook	4.[illegible]
Total	62.[illegible]

Table 7

Bridges

Stone masonry bridge	1
Reinforced concrete bridges	23
Steel bridges	18
Wooden bridges	5
Drawbridges	7*
Footbridges	14
Total	68

Culverts

Reinforced concrete and other masonry culverts	60

[12] Twenty-seven 600 c.p. all night, except November 1 to March 31, until 1 A.M.
[13] Until 1 A.M.
* Upstream half of Wellington Bridge under construction.

TABLE 8

Dams

Beaver Brook Reservation, small wooden dams	2
Blue Hills Parkway, small wooden dam at Canton Avenue Circle	1
Blue Hills Reservation, small wooden dams at St. Moritz	2
Blue Hills Reservation, small concrete dam at Ponkapoag Pond	1
Breakheart Reservation, small concrete dams	2
Charles River Reservation, wooden dam at Watertown, 220 feet in length	1
Charles River Reservation, Charles River Basin, tidal dam, 1200 feet in length	1
Charles River Reservation, small stone dam in branch below Washington Street, Newton Lower Falls	1
Charles River Reservation, reinforced concrete dam at Washington Street, Newton Lower Falls, 140 feet in length	1
Furnace Brook Parkway, reinforced concrete dam upstream from Black's Creek Bridge	1
Hemlock Gorge Reservation, small stone masonry dam with stop planks, in gorge	1
Hemlock Gorge Reservation, small reinforced concrete dam on east branch of River, Newton Upper Falls	1
Hemlock Gorge Reservation, reinforced concrete dam in Charles River at Boylston Street, Newton Upper Falls, 90 feet in length	1
Hemlock Gorge Reservation, small concrete dam at Reservoir Street	1
Mystic River Reservation, reinforced concrete tidal dam at Cradock Bridge, 100 feet in length; weirs 400 feet in length	1
Total	18

Lock Gates, Sluice Gates and Tide Gates

Charles River Reservation, Charles River Basin Tidal Dam, 6 lock gates, 13 sluice gates, 43 tide gates.
Mystic River Reservation, Cradock Bridge Tidal Dam, 2 lock gates, 4 sluice gates, 8 tide gates.
Quincy Shore Reservation, 8 tide gates.
Old Colony Parkway, Tenean Street, 1 tide gate.

Table 9

Contracts Made and Pending During

Contract Number	WORK	Number of Bids	Lowest
230	Furnishing foremen, carpenters, painters, pavers, concrete workers, and laborers for work on repairs to bridges under the care and control of this commission for the balance of the current calendar year 1935	21	$59.37* (labor group)
231	Bathhouse on the westerly side of the Veterans of Foreign Wars Parkway, bordering the Charles River, in the City of Boston, West Roxbury District	17	10,990.00
232	Reconstruction of Middlesex Fells Parkway, Fellsway East, from Pleasant Street to Savin Street, Malden	7	25,000.00
233	Reconstruction of Charles River Road from Station 26 + 65 to Beacon Square, Watertown	10	24,900.00
234	Reconstruction of a portion of Unquity Road, Blue Hills Reservation, Milton, from Hillside Street 4,800 feet northerly	15	33,333.33*
235	Reconstruction of Bear Hill Entrance and North Border Road, Middlesex Fells Reservation, from Marble Street to Main Street, Stoneham	10	36,998.00
236	Reconstruction of Middlesex Fells Parkway, Fellsway East from Fellsway West to Pleasant Street, easterly roadway, Malden	10	8,990.00
237	Construction of Administration Road, Blue Hills Reservation, Quincy and Braintree, from junction of Chickawbut and Wampatuck Roads to Granite Street	11	21,990.00*
238	Regrading and resurfacing the intersection of Old Colony Parkway at Victory Road in the Dorchester District of Boston	10	3,217.00
239	Reconstruction of portions of Lynnway from Revere Beach Reservation to Chamberlain Avenue and from Station 14 to Station 21, northeasterly in Revere	5	11,995.90
240	Reconstruction of Mystic Valley Parkway from Auburn Street to Main Street, Medford	7	39,411.00
241	Reconstruction of a portion of Unquity Road, Blue Hills Reservation, Milton, from Canton Avenue 3,400 feet south	10	17,777.77
242	Regrading and resurfacing sections of Old Colony Parkway near Pattens Cove at Conley Street and near Tolman Street in the Dorchester District of Boston	8	10,247.00
243	Reconstruction of recreation grounds between Traffic Road and Lynn Harbor in Nahant	12	5,450.00
244	Furnishing and erecting structural steel, grating. bumper plates, locking devices, wooden sidewalk and repairing fence on the downstream leaf and furnishing and erecting structural steel, bumper plates, locking devices. and repairing fence on the upstream leaf of the draw span at Charles River Dam in Boston	4	9,887.00
245	Traffic control signals, signs, and lines for the Neponset Bridge and Charles River Dam, Quincy and Boston	3	2,765.00
246	Furnishing and erecting 988 lineal feet of back nets and gates for children's playground and tennis courts and two sets of tennis net posts to be located on the recreation grounds and beach front in Nahant near the Nahant Beach Bathhouse	6	2,250.00
247	Sheet asphalt surfacing on tennis courts at the recreation grounds, Nahant Beach Parkway	3	1,393.00
248	Constructing reinforced concrete and brick garage adjoining the Lower Lock Gate House on the Charles River Dam in Boston	5	3,460.00

*Second lowest bidder.

Table 9

THE YEAR 1935 — PARKS DIVISION

Contractor	Date of Contract	Date of Completion	Value of work done Dec. 31, 1935
Vulcan Construction Co.	April 11, 1935	Dec. 31, 1935	$36,254.21
Vincent Caira	June 13, 1935	July 22, 1935	11,340.00
Simpson Bros. Corp.	June 20, 1935	Oct. 5, 1935	25,968.22
Simpson Bros. Corp.	June 20, 1935	Sept. 14, 1935	26,153.00
C. & R. Construction Company	June 27, 1935	Oct. 28, 1935	33,735.73
M. McDonough Company	June 27, 1935	Aug. 24, 1935	37,198.00
M. McDonough Company	Aug. 15, 1935	Aug. 20, 1935	8,990.00
C. & R. Construction Company	Aug. 29, 1935	Nov. 20, 1935	21,990.00
M. McDonough Company	Sept. 12, 1935	Sept. 27, 1935	3,173.02
M. McDonough Company	Sept. 19, 1935	–	10,111.51
M. McDonough Company	Oct. 3, 1935	–	35,105.00
C. & R. Construction Company	Sept. 26, 1935	Nov. 22, 1935	17,777.77
M. McDonough Company	Sept. 26, 1935	Oct. 23, 1935	9,986.16
M. McDonough Company	Nov. 7, 1935	–	3,591.25
Boston Bridge Works	Nov. 7, 1935	–	–
Municipal Signal and Supply Company	Nov. 21, 1935	–	–
American Spring Bed Manufacturing Co. doing business under the firm name and style of American Chain Link Fence Co.	Nov. 27, 1935	–	987.10
John McCourt Co.	Nov. 21, 1935	–	–
Vincent Caira	Nov. 21, 1935	–	3,493.50

Appendix No. 3

Statistics of Police Department

Miscellaneous Work Done by the Department

Accidents reported	2,250
Assistance rendered other departments	221
Buildings found open and secured	74
Cases investigated	1,193
Dead bodies found	43
Defective street lamps reported	908
Defective sidewalks reported	12
Defective streets reported	80
Fire alarms given	156
Fires extinguished without alarms	141
Injured and sick persons assisted	1,706
Insane persons cared for	15
Lost children restored	783
Rescued from drowning	67
Water running to waste reported	26
Vessels assisted to anchorage	6
Assistance rendered U. S. Coast Guard	2
Number of cases before the courts	3,296

List of Offences

Assault and Battery	22
Assault and Battery on a police officer	3
Attempt to rescue a prisoner	1
Breaking and entering and larceny	3
Being abroad in the night time	2
Breaking glass on bathing beach	2
Contributing to delinquency	1
Carrying concealed weapons	3
Default warrants	17
Demented persons	5
Delinquent children	26
Disturbing the peace	21
Drunkenness	606
Escape from State School	1
Evading car fare	1
Engaging in an affray	5
For other police departments	24
Gaming	5
Illegal possession of a still	2
Illegal possession of firearms	3
Indecent exposure	1
Larceny	33
Larceny, attempt	9
Larceny of auto	10
Larceny by check	3
Larceny from a building	2
Lewdness	4
Lottery, setting up	2
Lottery tickets in possession	1
Manslaughter	9
Malicious damage to property	4
Narcotics, illegal possession of	1
Neglect of minor children	1
Obscene pictures in possession	1
Profanity	1

Rape	2
Receiving stolen property	1
Robbery, armed	3
Runaways	3
Suspicious persons	9
Stubborn children	1
Trespass	14
Unnatural act	10
Using boat without authority	9
Vagrancy	6
Violation Fish and Game Laws	2
Violation of probation	103

Offences Against the Motor Vehicle Laws

Allowing another to use auto license	5
Allowing improper person to operate	12
Failing to stop at through way	74
Failing to stop for police officer	23
Failing to slow down at intersection	87
Failing to stop for red light	27
Faulty brakes	1
Giving false name	5
Improper lights	209
Impeding operation	4
Improper operation	2
Leaving scene of accident without making self known	55
Not duly licensed	102
No license in possession	53
No registration in possession	26
No registration plates	2
Operating while under the influence of intoxicating liquor	203
Operating so as the lives and safety of the public might be endangered	105
Operating after revocation of license	32
Operating after revocation of registration	1
Operating uninsured motor vehicle	9
Operating unregistered motor vehicle	10
Operating motor vehicle without authority	7
Operating motor vehicle at a speed greater than reasonable	1
Obscure registration plates	1
Passing where view was obstructed	4
Refusing to stop for police officer	1
Refusing to produce license to operate	1
Using motor vehicle without authority	13
Using registration plates issued to another	6
Unreasonable noise with auto horn	1
Uninspected motor vehicle	2

Offences Against the M.D.C. Rules and Regulations

Violation M.D.C. Rules, General	143
Violation M.D.C. Rules, Auto	570
Violation M.D.C. Rules, Speeding	501

DISPOSITIONS OF CASES IN THE LOWER COURTS

Dismissed	101
Filed	870
Fined	1,150
Defaulted	10
Committed to House of Correction	80
Committed to State Farm	13

Committed to Shirley School	6
Appealed	162
Committed to Concord Reformatory	1
Committed to Lyman School	3
Drunks released	207
Filed costs of court	217
Fine Suspended	33
House of Correction Suspended	42
Held for Grand Jury	18
Turned over to other police department	49
Committed to Psychopathic Hospital	4
Women's Reformatory Suspended	1
Discharged	113
No Probable Cause	4
Suspicious person	9
Cases pending	129
Probation	74

Superior Court Dispositions

Fined	49
Not Guilty	50
House of Correction Suspended	4
State Prison	3
House of Correction Committed	36
Filed	22
Nol Prossed	8
Probation	6
Committed to Concord Reformatory	2
Committed to Shirley School	2
Pending	22

Fines Assessed by the Courts

M.D.C. Rules — General	$322.00
M.D.C. Rules — Motor Vehicle	2,592.00
Motor Vehicle Law P.S.	12,843.00
General Laws	790.00
Drunkenness	693.00
Total	$17,240.00

Police Signal System

Blue Hills Division	35
Middlesex Fells Division	33½
Charles River Reservation	10
Fresh Pond Parkway	½
Total	79

Revere Beach Division police signal system, serving 11 miles of parkways and reservations, and Middlesex Fells Division, serving 3 miles of parkway, on wires leased from the New England Telephone and Telegraph Company.

Appendix No. 4

Contracts Made and Pending During

1 Number of Contract	2 WORK	3 Number of Bids	Amount of Bid		6 Contractor
			4 Next to Lowest	5 Lowest	
98[1]	Constructing water pipe tunnel under Saugus River, Lynn and Revere.	2	$111,430.00	$64,495.00[2]	C. J. Maney Co., Inc., Boston.
99[1]	Constructing water pipe tunnel under Mystic River, Medford and Somerville.	4	79,750.00	63,945.00[2]	Peter F. Connolly Co., Long Island City, New York.
102[1]	Laying water pipes in Lynn and Revere.	12	3,864.00	3,445.00[2]	C. J. Maney Co., Inc., Boston.
103[1]	Cast-iron water pipes and special castings.	3	76,006.50	74,384.00[2]	Identical bids were submitted by the United States Pipe & Foundry Co. of Burlington, New Jersey, and the Donaldson Iron Co. of Emaus, Pennsylvania, and contracts were awarded for one-half the amount of work to each, as listed below.
103[1]	Cast-iron water pipes and special castings.	–	–	–	United States Pipe & Foundry Co.
103½[1]	Cast-iron water pipes and special castings.	–	–	–	Donaldson Iron Co.
104	Furnishing and laying water pipes in Medford.	9	$195,218.00	$190,226.20[2]	Coleman Bros. Corp. Boston.

Appendix No. 4

THE YEAR 1935 — WATER DIVISION

7 Date of Contract	8 Date of Completion of Contract	9 Prices of Principal Items of Contract	10 Value of Work done Dec. 31, 1935
June 6, 1934	Nov. 9, 1935	See Annual Report for 1934.	$77,305.40
Oct. 4, 1934	Apr. 1, 1935	See Annual Report for 1934.	67,832.33
Apr. 10, 1935	May 14, 1935	For laying 20-inch cast-iron pipes, $.75 per lin. ft.; for laying 6-inch cast-iron pipes, $1.25 per lin. ft.; for rock excavation, $7 per cu. yd.; for earth excavation below established grade, $2 per cu. yd.; for chambers for blow-off and air valves, $80 per chamber; for concrete masonry for foundations for chambers and backing for curves, $9 per cu. yd.	2,847.79
–	–	For all 20-inch cement-lined bell and spigot pipes, Class B, $49.60 per ton of 2,000 lbs.; for all 20-inch cement-lined bell and spigot pipes, Class C, $49.60 per ton of 2,000 lbs.; for all bell and spigot special castings, $100 per ton of 2,000 lbs.; for all flanged special castings, $120 per ton of 2,000 lbs.	–
Apr. 23, 1935	Oct. 22, 1935	Ditto.	37,575.20
Apr. 23, 1935	Oct. 22, 1935	Ditto.	37,300.66
May 28, 1935	–	For furnishing and laying 48-inch electric-welded steel pipe, $17.13 per lin. ft.; for furnishing and laying 36-inch electric-welded steel pipe, $17.13 per lin. ft.; for laying 12-inch cast-iron pipe, furnished by the Commonwealth, for blow offs, $2 per lin. ft.; for laying 6-inch cast-iron pipe, furnished by the Commonwealth, for air vents, $1.25 per lin. ft.; for rock excavation above and below established grade, $5 per cu. yd.; for earth excavation below established grade, $4 per cu. yd.; for chambers for 36-inch gate valves, $175 per chamber; for chambers for blow-off, by-pass and connection valves, $100 per chamber; for chambers for air valves and manholes, $50 per chamber; for concrete masonry for foundations for valve chambers and anchorages for pipes, $8 per cu. yd.; for resetting edgestones, $0.50 per lin. ft.; for relaying granite block pavement on concrete base, $2.50 per sq. yd.; for bituminous Macadam pavement, $1.25 per sq. yd.; for Warrenite Bitulithic pavement on concrete base, $3 per sq. yd.; for reinforced cement concrete pavement, $2.25 per sq. yd.; for granolithic walks, $2 per sq. yd.	209,264.87

1 Number of Contract	2 WORK	3 Number of Bids	Amount of Bid		6 Contractor
			4 Next to Lowest	5 Lowest	
105.[1]	Furnishing expansion joints for 20-inch water pipes.	6	$1,835.60 (2% discount 10 days)	$1,549.75[2] (2% discount 10th of month following shipment)	Crane Company, South Boston, Mass.
106.[1]	Laying water pipes at Wellington Bridge in Medford and Somerville.	–[3]	–[3]	–[3]	Coleman Bros. Corp., Boston.
107	Rock excavation for Intermediate High Service Pipe Line in Arlington and Belmont.	1	–	7,095.00[2]	John A. Gaffey and Son, Medford, Mass.
108[1]	Insulating water pipes at Wellington Bridge in Medford and Somerville and General Clarence R. Edwards Bridge in Lynn and Revere.	6	7,407.00[2]	4,900.00	P. S. Thorsen Co. of Mass., South Boston, Mass.
109	Venturi meter tubes and register-indicator-recorders.	–[3]	–[3]	–[3]	Builders Iron Foundry, Providence, Rhode Island.
35-M	Sale and purchase of electric energy to be developed at Wachusett Dam in Clinton.	–[3]	–[3]	–[3]	New England Power Co. and Edison Electric Illuminating Co. of Boston.
36-M	Sale and purchase of electric energy to be developed at Sudbury Dam in Southborough.	–[3]	–[3]	–[3]	Edison Electric Illuminating Company of Boston.

[1] Contract completed.
[2] Contract based upon this bid.
[3] Competitive bids were not received.

THE YEAR 1935 — WATER DIVISION — Concluded

7	8	9	10
Date of Contract	Date of Completion of Contract	Prices of Principal Items of Contract	Value of Work done Dec. 31, 1935
Apr. 24, 1935	June 10, 1935	For furnishing expansion joints for water pipes 20 inches inside diameter, $309.95 per joint.	$1,518.75
May 28, 1935	Aug. 1, 1935	The actual cost of the work plus 15 per cent on labor and equipment furnished, Workmen's Compensation Insurance, Public Liability Insurance and Bond premium paid.	22,216.96
July 13, 1935	–	For rock excavation, $4.73 per cu. yd.	–
Sept. 25, 1935	Nov. 6, 1935	For insulating water pipes at the Wellington Bridge, the lump sum of $1,167; for insulating water pipes at the General Clarence R. Edwards Bridge, the lump sum of $6,240.	7,407.00
Oct. 14, 1935	–	For 20″ x 10″ Herschel Standard Venturi Meter Tube, $660; for 16″ x 5″ Herschel Standard Venturi Meter Tube, $450; for 12″ x 4″ Herschel Standard Venturi Meter Tube, $270; for special Metropolitan Water Works Type "Y" Register-Indicator-Recorder for Panel Installation, $695; for Special Rustproof Metropolitan Water Works Type "Y" Register-Indicator-Recorders with rustless hoods, $675 each.	1,380.00
Mar. 1, 1929	–	Sale and purchase to include on week days, excepting Saturday afternoons and legal holidays, all electricity generated after deduction of that used by Commission in connection with the operation of its works in Wachusett Section. Contract to continue until terminated by either party by giving 6 months' notice, but not earlier than March 1, 1939.	337,478.55
Mar. 1, 1929	–	Sale and purchase to include all electricity generated after deduction of that used by Commission in connection with operation of its Sudbury Power Station. Contract to continue for 10 years.	194,102.33

Appendix No. 5

Table No. 1. — *Monthly Rainfall in inches at Various Places on the Metropolitan Water Works, 1935*

	January	February	March	April	May	June	July	August	September	October	November	December	Totals
Wachusett Watershed:													
Princeton	6.91	3.57	2.35	4.92	2.37	5.71	2.87	1.66	4.63	0.86	4.29	0.98	41.12
Jefferson	6.90	3.80	2.42	4.26	2.72	5.63	2.95	1.84	4.69	0.74	4.77	1.22	41.94
Sterling	6.33	3.49	1.97	3.40	2.53	5.93	2.27	1.78	4.82	0.54	4.63	1.27	38.96
Boylston	7.06	3.67	2.00	3.77	3.04	6.27	3.17	3.26	4.37	0.79	5.01	1.24	43.65
Sudbury Watershed:													
Sudbury Dam	6.66	3.38	1.84	5.22	2.29	5.71	1.56	1.53	4.23	0.55	5.12	1.02	39.11
Framingham	6.80	2.97	1.90	5.50	2.31	5.99	2.00	1.37	3.84	0.54	4.87	1.06	39.15
Ashland Dam	7.51	3.32	1.74	4.73	2.56	4.96	2.13	2.31	4.08	0.58	4.60	1.01	39.53
Cordaville	7.05	3.32	1.81	4.89	2.45	4.96	1.64	1.31	3.56	0.46	5.33	1.02	37.80
Lake Cochituate	7.79	3.46	2.59	5.93	1.99	5.78	1.96	2.12	3.99	0.62	5.26	1.09	42.58
Chestnut Hill Reservoir	7.82	3.01	1.63	5.61	1.65	6.42	1.67	2.47	3.45	0.64	4.98	0.94	40.29
Spot Pond	8.28	4.19	2.03	6.04	1.60	5.88	1.81	1.64	4.32	0.56	5.17	1.14	42.66
Average of All	7.19	3.47	2.03	4.93	2.32	5.75	2.18	1.94	4.18	0.63	4.91	1.09	40.62
Average, Wachusett Watershed	6.80	3.63	2.19	4.09	2.66	5.89	2.81	2.14	4.63	0.73	4.67	1.18	41.42
Average, Sudbury Watershed	7.01	3.25	1.82	5.08	2.40	5.41	1.83	1.63	3.93	0.53	4.98	1.03	38.90

TABLE 2. — *Rainfall in Inches at Chestnut Hill Reservoir* — 1935

DATE	AMOUNT	DURATION
Jan. 1	.73 [2]	7.00 A.M. to 2.00 P.M.
Jan. 8	.02	11.15 P.M. to 6.00 A.M.
Jan. 9	3.56	8.45 A.M. to 11.30 A.M.
Jan. 10	.19	3.40 P.M. to 3.00 A.M.
Jan. 13	.47	8.30 A.M. to 8.00 P.M.
Jan. 14	.37 [2]	9.40 A.M. to 12.15 P.M.
Jan. 17	.26	10.30 A.M. to 8.15 A.M.
Jan. 20	2.13	12.45 P.M. to 8.30 A.M.
Jan. 21	.08	2.00 A.M. to 6.30 A.M.
Jan. 22	.01 [1]	12.00 MID. to 1.30 P.M.
Jan. 23		
Jan. 24		
Jan. 26		
Jan. 28		
Jan. 29		
Total	7.82	
Feb. 8	.22 [2]	8.20 A.M. to 12.00 NOON
Feb. 9		
Feb. 14	1.22 [2]	12.30 P.M. to 1.15 P.M.
Feb. 14	.67 [2]	3.20 P.M. to 2.15 A.M.
Feb. 15	.02 [2]	4.45 A.M. to 8.45 A.M.
Feb. 16	.45 [2]	3.05 P.M. to 4.00 P.M.
Feb. 17	.43 [2]	2.05 A.M. to 1.00 A.M.
Feb. 19		9.30 A.M. to 2.00 P.M.
Feb. 22		7.10 P.M. to 11.05 A.M.
Feb. 24		
Feb. 26		
Feb. 26		
Feb. 27		
Total	3.01	
Mar. 7	.03 [1]	7.00 P.M. to 2.00 A.M.
Mar. 8	.06	5.00 P.M. to 12.00 MID.
Mar. 10	.10 [2]	9.10 P.M. to 11.00 A.M.
Mar. 11	.43 [2]	8.20 P.M. to 7.30 A.M.
Mar. 12	.11	12.00 N'N to 8.15 P.M.
Mar. 12	.03	11.30 P.M. to 12.00 MID.
Mar. 13	.84	3.30 P.M. to 11.15 P.M.
Mar. 19	.03	1.15 A.M. to 7.30 A.M.
Mar. 23		
Mar. 28		
Mar. 30		
Total	1.63	

DATE	AMOUNT	DURATION
Apr. 1	.03	6.45 P.M. to 11.30 P.M.
Apr. 5	.03	11.30 P.M. to 1.15 A.M.
Apr. 6	3.27 [2]	6.45 A.M. to 3.10 P.M.
Apr. 9	1.58	1.00 P.M. to 11.30 P.M.
Apr. 10	.07	2.00 A.M. to 3.40 A.M.
Apr. 12	.10 [1]	5.00 P.M. to 4.30 A.M.
Apr. 13	.03	11.35 A.M. to 1.00 P.M.
Apr. 17	.27	12.30 P.M. to 5.00 P.M.
Apr. 17	.23	3.00 A.M. to 1.10 P.M.
Apr. 18		
Apr. 18		
Apr. 24		
Apr. 30		
Total	5.61	
May 4	.28	4.20 A.M. to 6.30 A.M.
May 4	.02	7.45 A.M. to 9.30 A.M.
May 5	.09	7.45 A.M. to 9.30 A.M.
May 5	.29	8.00 P.M. to 3.30 A.M.
May 6	.69	1.30 A.M. to 9.30 P.M.
May 7	.13	11.30 P.M. to 1.15 A.M.
May 10	.01	6.15 P.M. to 7.15 P.M.
May 11	.14	5.20 P.M. to 9.30 P.M.
May 20		6.20 A.M. to 7.00 A.M.
May 31		
June 1		
Total	1.65	
June 1	.20	7.05 A.M. to 2.10 P.M.
June 4	.75	11.00 A.M. to 7.00 A.M.
June 5	.07	2.00 P.M. to 3.15 P.M.
June 6	.02	9.20 P.M. to 11.45 P.M.
June 8	1.29	9.15 A.M. to 10.00 P.M.
June 9	.52	3.00 A.M. to 4.00 P.M.
June 10	.34	2.40 P.M. to 3.20 A.M.
June 15	2.10	8.10 P.M. to 11.00 A.M.
June 16	.61	7.30 P.M. to 8.00 A.M.
June 17	.10	6.40 P.M. to 8.20 P.M.
June 18	.42	3.30 P.M. to 4.15 P.M.
June 19		
June 20		
June 24		
June 25		
Total	6.42	

[1] Snow.
[2] Rain and Snow.

TABLE 2. — *Rainfall in Inches at Chestnut Hill Reservoir, 1935* — Concluded

DATE	AMOUNT	DURATION
ly 8	.18	12.25 A.M. to 1.30 P.M.
ly 9	.59	11.00 A.M. to 2.15 A.M.
ly 10		
ly 12	.11	7.10 P.M. to 7.45 P.M.
ly 13		2.15 A.M. to 3.20 A.M.
ly 15	.07	2.00 P.M. to 3.20 P.M.
ly 16	.40	8.45 A.M. to 1.30 P.M.
ly 19	.22	4.50 P.M. to 7.40 P.M.
ly 23	.04	5.10 P.M. to 7.20 P.M.
ly 25	.01	3.00 P.M. to 6.10 P.M.
ly 25		11.30 A.M. to 1.30 P.M.
ly 29	.05	7.05 A.M. to 8.10 A.M.
ly 29		10.30 A.M. to 1.45 P.M.
Total	1.67	
ug. 5	.18	4.30 A.M. to 5.50 A.M.
ug. 5	.14	2.10 P.M. to 5.30 P.M.
ug. 21	.08	12.45 P.M. to 3.05 P.M.
ug. 22		1.30 A.M. to 2.15 A.M.
ug. 22	1.57	1.50 P.M. to 7.20 P.M.
ug. 27	.10	11.40 A.M. to 1.35 P.M.
ug. 28		1.30 A.M. to 1.45 A.M.
ug. 28	.03	12.10 P.M. to 12.45 P.M.
ug. 30	.37	7.00 A.M. to 9.05 P.M.
Total	2.47	
ept. 4	1.35	2.20 P.M. to 2.30 A.M.
ept. 5		
ept. 6	.03	9.45 A.M. to 2.30 P.M.
ept. 9	.18	4.00 A.M. to 10.30 A.M.
ept. 9	1.29	3.15 P.M. to 4.35 A.M.
ept. 10		
ept. 15	.15	8.50 A.M. to 11.30 A.M.
ept. 18	.01	2.15 A.M. to 2.30 A.M.
ept. 28	.09	12.45 A.M. to 6.45 A.M.
ept. 28	.31	7.30 A.M. to 1.30 A.M.
ept. 29		
ept. 29	.04	4.00 P.M. to 6.20 P.M.
Total	3.45	

DATE	AMOUNT	DURATION
Oct. 1	.07	12.45 A.M. to 4.15 A.M.
Oct. 2		
Oct. 5	.20	12.15 A.M. to 5.30 P.M.
Oct. 6		
Oct. 11	.05	9.50 P.M. to 12.45 A.M.
Oct. 12		
Oct. 18	.11	4.00 P.M. to 6.20 P.M.
Oct. 23	.08	4.00 P.M. to 1.05 A.M.
Oct. 24		
Oct. 31	.13	2.30 A.M. to 6.30 A.M.
Total	.64	
Nov. 1	.22	10.30 A.M. to 1.20 P.M.
Nov. 2	.34	12.15 MID. to 1.30 A.M.
Nov. 2		4.00 P.M. to 6.30 P.M.
Nov. 7	.05	3.10 P.M. to 8.00 P.M.
Nov. 10	.02	9.30 P.M. to 6.45 A.M.
Nov. 11		
Nov. 12	.03	2.20 A.M. to 4.00 A.M.
Nov. 12	.28	8.00 A.M. to 5.00 A.M.
Nov. 13		
Nov. 15	.03	2.30 P.M. to 7.00 P.M.
Nov. 15	.02 [2]	11.30 P.M. to 3.30 A.M.
Nov. 16		
Nov. 16	2.04 [2]	2.20 P.M. to 6.30 A.M.
Nov. 18		
Nov. 23	.15 [2]	10.45 A.M. to 2.45 A.M.
Nov. 24		
Nov. 28	1.80	2.15 A.M. to 8.10 A.M.
Nov. 29		
Total	4.98	
Dec. 1	.04 [2]	1.30 P.M. to 6.15 P.M.
Dec. 9	.27	1.30 A.M. to 1.30 P.M.
Dec. 10	.01	9.05 P.M. to 10.30 P.M.
Dec. 11	.01	10.55 A.M. to 1.30 P.M.
Dec. 15	.57	6.45 A.M. to 6.45 A.M.
Dec. 16		
Dec. 16	.01	2.20 P.M. to 5.45 P.M.
Dec. 26	.03 [1]	12.50 A.M. to 3.15 A.M.
Total	.94	

Total for year 40.29.
[1] Snow.
[2] Rain and Snow.

TABLE NO. 3. — *Wachusett System — Statistics of Flow of Water, Storage and Rainfall in 1935*

(Watershed above dam = 108.84 square miles)

MONTH	GALLONS PER DAY											RAINFALL (INCHES)	RAINFALL COLLECTED (INCHES)	PERCENTAGE OF RAINFALL COLLECTED
	Taken by Town of Clinton	Taken by City of Worcester	Received from Ware River Watershed	Received [1] from City of Worcester Watershed	Discharged [2] into Wachusett Aqueduct	Wasted into River below Dam	Seepage [3] through the North Dike	STORAGE [4] Gain	STORAGE [4] Loss	Total Yield of Watershed	Yield per Square Mile			
January	–	–	603,000	15,777,000	94,603,000	1,848,000	955,000	163,909,000	–	244,935,000	2,250,000	6.80	4.014	59.0
February	–	–	3,021,000	5,450,000	160,214,000	2,382,000	1,000,000	2,379,000	–	157,504,000	1,447,000	3.63	2.332	64.2
March	–	–	771,000	19,913,000	161,093,000	79,639,000	1,000,000	79,600,000	–	300,648,000	2,762,000	2.19	4.927	225.5
April	–	–	–	21,169,000	123,779,000	94,067,000	1,001,000	53,034,000	–	250,712,000	2,303,000	4.09	3.971	97.1
May	–	–	–	3,477,000	130,874,000	32,026,000	1,000,000	–	38,594,000	121,829,000	1,119,000	2.67	1.997	74.9
June	–	–	–	4,537,000	100,777,000	13,880,000	1,000,000	34,423,000	–	145,543,000	1,337,000	5.89	2.308	39.2
July	571,000	–	–	–	144,942,000	4,158,000	1,000,000	–	96,300,000	54,371,000	500,000	2.81	0.891	31.7
August	955,000	–	–	–	142,819,000	1,836,000	1,000,000	–	124,194,000	22,416,000	206,000	2.13	0.367	17.2
September	882,000	–	–	–	133,398,000	1,721,000	998,000	–	94,322,000	42,677,000	392,000	4.63	0.678	14.6
October	916,000	–	–	–	145,952,000	1,726,000	919,000	–	128,013,000	21,500,000	198,000	0.73	0.352	48.1
November	870,000	–	–	–	120,823,000	1,693,000	830,000	–	55,373,000	68,843,000	633,000	4.67	1.092	23.4
December	623,000	–	1,997,000	–	114,368,000	1,710,000	800,000	–	63,852,000	51,652,000	475,000	1.18	0.847	71.9
Total												41.42	23.776	
Av. for Yr.	405,000	–	518,000	5,855,000	131,025,000	19,767,000	958,000	–	22,569,000	123,213,000	1,132,000	–	–	57.4

[1] Received from City of Worcester watershed, not included in Wachusett watershed yield.
[2] Including 231,000 gallons per day drawn from aqueduct for supply of Westborough State Hospital.
[3] Estimated.
[4] Aggregate storage in Wachusett Reservoir and in ponds and mill reservoirs.

TABLE 3. — *Metropolitan Park System — Mileage of Roadways — December 30, 1935.*

		Alewife Brook Parkway	Blue Hills Parkway		Blue Hills Res.	Veterans of Foreign Wars Parkway	Charles River Res.		Dedham Parkway	East Milton Street		Fresh Pond Parkway	Furnace Brook Parkway	Hammond Pond Parkway	Lynn Fells Parkway	Lynn Shore Res.	Lynnway	Memorial Drive		Middlesex Fells Parkway		Middlesex Fells Res.		Mystic Valley Parkway		Nahant Beach Parkway	Nantasket Beach Res.	Neponset River Parkway	Old Colony Boulevard	Quannapowitt Parkway	Quincy Shore Res.	Revere Beach Parkway		Revere Beach Res.	Stony Brook Res.	West Roxbury Parkway	Winthrop Parkway	Winthrop Shore Res.	Woburn Parkway	Total Miles		Grand Total Miles	
			Double	Single		Double	Double	Single		Double	Single							Double	Single	Double	Single	Double	Single	Double	Single							Double	Single							Doub Roadway	Single Roadway		
	Cities.																																									
1	Boston	–	–	.02	–	2.44	.70	5.01	.49	.21	.30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.52	2.85	–	–	–	–	3.57	2.07	–	–	–	3.35	14.83	21.53	1
2	Cambridge	1.31	–	–	–	–	–	.13	–	–	–	.52	–	–	–	–	–	1.14	2.42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.14	4.38	6.66	2
3	Chelsea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.32	.47	–	–	–	–	–	–	.32	.47	1.11	3
4	Everett	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.64	1.12	–	–	–	–	–	–	.64	1.12	2.40	4
5	Lynn	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.04	.12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.16	1.16	5
6	Malden	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.02	.70	–	.74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.02	1.44	3.48	6
7	Medford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.65	.22	.40	3.60	.96	3.32	–	–	–	–	–	–	–	.47	–	–	–	–	–	–	4.01	7.61	15.63	7
8	Melrose	–	–	–	–	–	–	–	–	–	–	–	–	–	1.90	–	–	–	–	–	–	–	1.04	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.94	2.94	8
9	Newton	–	–	–	–	–	–	2.67	–	–	–	–	–	1.14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.81	3.81	9
10	Quincy	–	–	–	5.06	–	–	–	–	–	–	–	3.37	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.31	–	2.44	–	–	–	–	–	–	–	–	–	11.18	11.18	10
11	Revere	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.53	2.21	2.70	–	–	.89	–	–	.53	6.37	7.43	11
12	Somerville	.93	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.34	.48	–	–	–	.38	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.34	1.79	2.47	12
13	Waltham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13
14	Woburn	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.31	–	1.31	1.31	14
	Towns.																																									
15	Arlington	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.46	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.46	1.46	15
16	Belmont	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16
17	Braintree	–	–	–	.30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.39	.39	17
18	Brookline	–	–	–	–	.27	–	–	–	–	–	–	–	.78	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.28	–	–	–	.27	2.03	2.60	18
19	Canton	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	19
20	Dedham	–	–	–	–	–	–	–	.49	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.49	.49	20
21	Dover	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21
22	Hingham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	22
23	Hull	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.71	–	–	–	–	–	–	–	–	–	–	–	–	–	.71	.71	23
24	Milton	–	1.41	1.46	*5.26	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.53	–	–	–	–	–	–	–	–	–	–	–	1.41	7.25	10.07	24
25	Nahant	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.94	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.94	1.94	25
26	Needham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	26
27	Saugus	–	–	–	–	–	–	–	–	–	–	–	–	–	1.71	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1 71	1.71	27
28	Stoneham	–	–	–	–	–	–	–	–	–	–	–	–	–	.02	–	–	–	–	–	–	–	5.85	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5.87	5.87	28
29	Swampscott	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.08	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.08	.08	29
30	Wakefield	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.68	–	–	–	–	–	–	–	–	–	–	–	.68	.68	30
31	Watertown	–	–	–	–	–	–	1.74	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.74	1.74	31
32	Wellesley	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	32
33	Weston	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	33
34	Westwood	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	34
35	Weymouth	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	35
36	Winchester	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.31	–	1.81	–	–	–	–	–	–	–	–	–	–	–	–	–	.07	–	3.19	3.19	36
37	Winthrop	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.20	1.07	–	–	1.27	1.27	37
	Single Roadway	2.24	–	1.48	10.71	–	–	9.55	.98	–	.30	.52	3.37	1.92	3.63	1.12	.69	–	2.42	–	1.40	–	12.54	–	6.97	1.94	.71	1.05	3.16	.68	2.44	–	4.27	2.70	3.57	3.35	1.09	1.07	1.38	–	87.25		
	Double Roadway	–	1.41	–	–	2.71	.70	–	–	.21	–	–	–	–	–	–	–	1.14	–	4.01	–	.40	–	.96	–	–	–	–	–	–	–	1.49	–	–	–	–	–	–	–	13.03	–	113.31	

*Equivalent in miles of single roadway—26.06 miles.

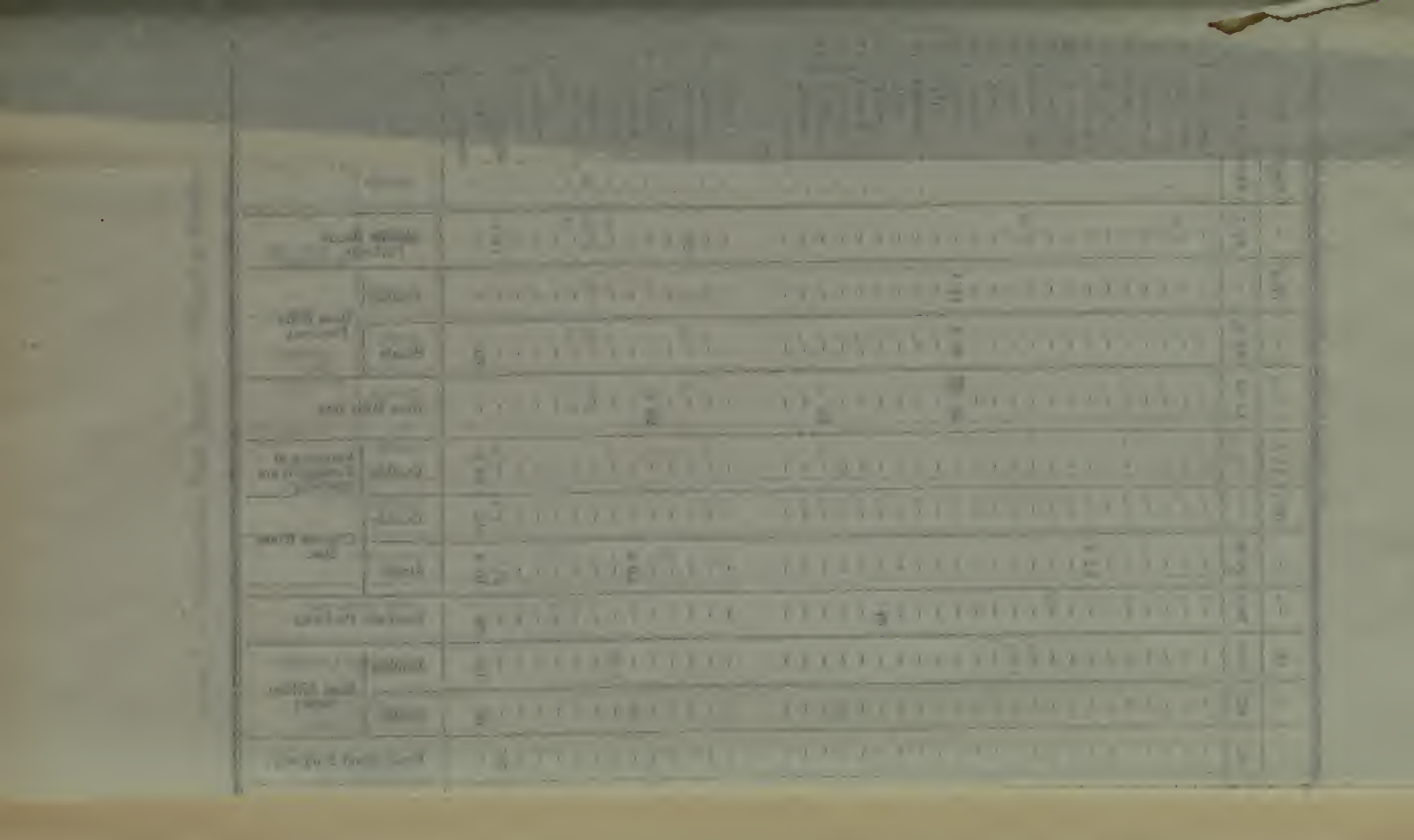


TABLE 2. — *Metropolitan Park System — Areas of Reservations and Parkways — December 1, 1935.*

		(RESERVATIONS ACRES)																(PARKWAYS ACRES)																					
		Beaver Brook	Blue Hills	Breakheart	Bunker Hill	Charles River	Hemlock Gorge	King's Beach and Lynn Shore	Middlesex Fells	Mystic River	Nantasket Beach	Neponset River	Quincy Shore	Revere Beach	Stony Brook	Winthrop Shore	Total Acres	Alewife Brook	Blue Hills	Veterans of Foreign Wars	Dedham	Fresh Pond	Furnace Brook	Hammond Pond	Lynn Fells	Lynnway	Middlesex Fells	Mystic Valley	Nahant Beach	Neponset River	Old Colony	Quannapowitt	Revere Beach	West Roxbury	Winthrop	Woburn	Total Acres	Grand Total Reservations and Parkways (Acres)	
	Cities.																																						
1	Boston	–	–	–	6.05	204.33	–	–	–	–	–	145.57	–	–	463.72	–	819.57	–	.27	49.62	21.98	–	–	–	–	–	–	–	–	28.80*	50.67	–	–	75.59	–	–	226.93	1,046.60	1
2	Cambridge	–	–	–	–	223.98	–	–	–	–	–	–	–	–	–	–	223.98	86.21	–	–	–	12.40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	98 61	322.59	2
3	Chelsea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21.16	–	–	–	21.16	21.16	3
4	Everett	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	31.14	–	–	–	31.14	31.14	4
5	Lynn	–	–	–	–	–	–	19.59	–	–	–	–	–	–	–	–	19.59	–	–	–	–	–	–	–	–	–	–	.32	–	–	–	–	–	–	–	.32	19.91	5
6	Malden	–	–	–	–	–	–	–	59.53	–	–	–	–	–	–	–	59.53	–	–	–	–	–	–	–	–	–	23.58	–	–	–	–	–	–	–	–	23.58	83.11	6
7	Medford	–	–	–	–	–	–	–	963.73	42.32	–	–	–	–	–	–	1,005.05	–	–	–	–	–	–	–	–	–	45.01	278.82	–	–	–	–	8.10	–	–	331.93	1,337.98	7
8	Melrose	–	–	–	–	–	–	–	180.19	–	–	–	–	–	–	–	180.19	–	–	–	–	–	–	–	14.38	–	–	–	–	–	–	–	–	–	–	14.38	194.57	8
9	Newton	–	–	–	–	187.64	4.24	–	–	–	–	–	–	–	–	–	191.88	–	–	–	–	–	–	117.46	–	–	–	–	–	–	–	–	–	–	–	117.45	309.34	9
10	Quincy	–	2,562.49	–	–	–	–	–	–	–	–	–	40.75	–	–	–	2,603.24	–	–	–	–	–	101.12	–	–	–	–	–	–	–	2.72	–	–	–	–	103.84	2,707.08	10
11	Revere	–	–	–	–	–	–	–	–	–	–	–	–	64.29	–	–	64.29	–	–	–	–	–	–	–	–	5.15	–	–	–	–	–	–	67.22	–	8.61	–	80.98	145.27	11
12	Somerville	–	–	–	–	–	–	–	–	5.91	–	–	–	–	–	–	5.91	10.00	–	–	–	–	–	–	–	–	11.83	4.95	–	–	–	–	–	–	–	–	26.78	32.69	12
13	Waltham	42.77	–	–	–	38.63	–	–	–	–	–	–	–	–	–	–	81.40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	81.40	13
14	Woburn	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	22.63	22.63	22.63	14
	Towns.																																						
15	Arlington	–	–	–	–	–	–	–	–	7.83	–	–	–	–	–	–	7.83	28.10	–	–	–	–	–	–	–	–	–	17.01	–	–	–	–	–	–	–	45.11	52.94	15
16	Belmont	15.55	–	–	–	–	–	–	–	–	–	–	–	–	–	–	15.55	20.43	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20.43	35.98	16
17	Braintree	–	57.84	–	–	–	–	–	–	–	–	–	–	–	–	–	67.84	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	67.84	17
18	Brookline	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.96	–	–	–	75.04	–	–	–	–	–	–	–	–	13.66	–	–	91.65	01.66	18
19	Canton	–	564.66	–	–	–	–	–	–	–	–	264.25	–	–	–	–	828.92	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	828.92	19
20	Dedham	–	–	–	–	6.51	–	–	–	–	–	234.54	–	–	–	–	241.05	–	–	–	15.16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	15.16	256.21	20
21	Dover	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21
22	Hingham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	22
23	Hull	–	–	–	–	–	–	–	–	–	25.59	–	–	–	–	–	25.59	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	25.59	23
24	Milton	–	1,555.78	–	–	–	–	–	–	–	–	269.09	–	–	–	–	1,824.87	–	33.31	–	–	–	–	–	–	–	–	–	–	51.44	–	–	–	–	–	134.75	1,959.52	24
25	Nahant	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	56.22	–	–	–	–	–	–	66.22	66.22	25
26	Needham	–	–	–	–	–	14.24	–	–	–	–	–	–	–	–	–	14.24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14.24	26
	(Randolph)	–	885.25	–	–	–	–	–	–	–	–	–	–	–	–	–	885.25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	885.25	
27	Saugus	–	–	494.70	–	–	–	–	–	–	–	–	–	–	–	–	494.70	–	–	–	–	–	–	–	25.14	–	–	–	–	–	–	–	–	–	–	25.14	519.84	27
28	Stoneham	–	–	–	–	–	–	–	705.41	–	–	–	–	–	–	–	705.41	–	–	–	–	–	–	–	.15	–	–	–	–	–	–	–	–	–	–	.15	705.56	28
29	Swampscott	–	–	–	–	–	–	3.10	–	–	–	–	–	–	–	–	3.10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.10	29
30	Wakefield	–	–	85.00	–	–	–	–	–	–	–	–	–	–	–	–	85.00	–	–	–	–	–	–	–	–	–	–	–	–	–	15.54	–	–	–	–	15.54	100.54	30
31	Watertown	–	–	–	–	80.95	–	–	–	–	–	–	–	–	–	–	80.95	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	80.95	31
32	Wellesley	–	–	–	–	66.07	4.58	–	–	–	–	–	–	–	–	–	70.65	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	70.65	32
33	Weston	–	–	–	–	152.52	–	–	–	–	–	–	–	–	–	–	152.52	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	152.52	33
34	Westwood	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6.57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6.57	34
35	Weymouth	–	–	–	–	–	–	–	–	–	–	6.57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	35
36	Winchester	–	–	–	–	–	–	–	261.93	–	–	–	–	–	–	–	261.93	–	–	–	–	–	–	–	–	–	–	48.28	–	–	–	–	–	–	.60	48.88	310.81	36
37	Winthrop	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16.83	16.83	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.13	–	.13	16.96	37
		58.32	5,636.02	579.70	6.05	950.63	23.03	22.69	2,170.79	56.05	25.59	920.03	40.75	64.29	463.72	16.83	11,044.53	144.74	83.58	52.58	37.14	12.40	101.12	192.50	39.67	5.15	80.42	349.06	66.54	80.24	53.39	15.54	127.62	89.25	8.74	23.23	1,562.91	12,607.44	

*Includee East Milton St. from Wolcott Square to Paul's Bridge.

TABLE NO. 4. — *Sudbury System — Statistics of Flow of Water, Storage and Rainfall in 1935*

(Watershed = 75.2 square miles)

MONTH	GALLONS PER DAY													
	Water* received from Wachusett Reservoir	Water discharged through Sudbury Aqueduct	Water discharged through Weston Aqueduct	Water used by Framingham Water Works	Water diverted from Watershed by Sewers, etc.	Water wasted from Farm Pond	Water wasted into River below Lowest Dam	STORAGE		Total Yield of Watershed	Yield per Square Mile	Rainfall (Inches)	Rainfall Collected (Inches)	Percentage of Rainfall Collected
								Gain	Loss					
January	94,374,000	21,435,000	117,310,000	1,703,000	1,052,000	271,000	118,339,000	–	24,955,000	140,781,000	1,872,000	7.01	3.339	47.7
February	159,986,000	20,307,000	116,239,000	1,779,000	768,000	–	171,132,000	–	44,328,000	105,911,000	1,408,000	3.25	2.269	69.9
March	160,877,000	17,484,000	110,048,000	1,700,000	1,597,000	–	199,071,000	36,593,000	–	205,616,000	2,734,000	1.82	4.877	267.5
April	123,562,000	10,261,000	111,255,000	1,459,000	1,662,000	417,000	145,612,000	49,896,000	–	197,000,000	2,620,000	5.08	4.516	88.8
May	130,648,000	15,064,000 [1]	108,448,000	1,552,000	655,000	90,000	78,039,000	–	6,294,000	66,906,000	890,000	2.40	1.587	66.1
June	100,547,000	14,457,000	109,570,000	1,470,000	667,000	50,000	54,063,000	2,283,000	–	82,013,000	1,091,000	5.41	1.883	34.8
July	144,690,000	22,410,000	115,939,000	1,519,000	316,000	–	11,810,000	–	94,000	7,210,000	96,000	1.83	0.171	9.3
August	142,555,000	27,235,000	119,526,000	1,620,000	142,000	–	2,997,000	–	15,313,000	–6,348,000	–84,000	1.63	–0.150	–9.2
September	133,165,000	20,132,000	103,822,000	1,478,000	313,000	–	6,744,000	8,798,000	–	8,122,000	108,000	3.93	0.187	4.8
October	145,716,000	20,361,000	114,487,000	1,407,000	139,000	–	1,555,000	90,000	–	–7,677,000	–102,000	0.53	–0.182	–34.2
November	120,600,000	19,640,000 [2]	104,914,000	1,403,000	323,000	–	13,957,000	13,073,000	–	32,710,000	435,000	4.98	0.751	15.1
December	114,145,000	22,965,000	114,523,000	1,448,000	329,000	–	25,645,000	–	22,713,000	28,052,000	373,000	1.03	0.665	64.7
Total												38.90	19.913	
Av. for Yr.	130,793,000	19,341,000	112,191,000	1,544,000	662,000	69,000	68,379,000	–	95,000	71,298,000	948,000			51.2

* Not including 231,000 gallons per day drawn from Wachusett Aqueduct for the supply of the Westborough State Hospital, not discharged into Sudbury Reservoir.
[1] Includes 245,000 gallons per day to Lake Cochituate.
[2] Includes 163,000 gallons per day to Lake Cochituate.

TABLE NO. 5. — *Cochituate System — Statistics of Flow of Water, Storage and Rainfall in 1935*

(Watershed of Lake = 17.58 square miles*)

MONTH	GALLONS PER DAY							Rainfall (Inches)	Rainfall Collected (Inches)	Percentage of Rainfall Collected
	Water received from Sudbury Aqueduct	Water diverted from Watershed by Sewers, etc.	Water wasted at Outlet of Lake	STORAGE		Total Yield of Watershed	Yield per Square Mile			
				Gain	Loss					
January	–	977,000	37,023,000	–	5,200,000	32,800,000	1,866,000	7.79	3.328	42.7
February	–	1,003,000	33,575,000	–	5,157,000	29,421,000	1,674,000	3.46	2.696	77.9
March	–	1,716,000	33,136,000	8,642,000	–	43,494,000	2,474,000	2.59	4.413	170.4
April	–	2,403,000	43,891,000	2,357,000	–	48,651,000	2,767,000	5.93	4.771	80.4
May	245,000	1,010,000	15,100,000	132,000	–	15,997,000	910,000	1.99	1.623	81.6
June	–	760,000	16,817,000	160,000	–	17,737,000	1,009,000	5.78	1.742	30.1
July	–	384,000	–	2,361,000	–	2,745,000	156,000	1.96	0.279	14.2
August	–	42,000	–	–	–	42,000	2,000	2.12	0.004	0.2
September	–	233,000	6,937,000	–	2,753,000	4,417,000	251,000	3.99	0.434	10.9
October	–	229,000	–	152,000	–	381,000	22,000	0.62	0.039	6.2
November	163,000	227,000	11,320,000	–	2,447,000	8,937,000	508,000	5.26	0.878	16.7
December	–	355,000	10,842,000	–	5,494,000	5,703,000	324,000	1.09	0.579	53.1
Total								42.58	20.785	
Average for year	34,000	755,000	17,224,000	–	567,000	17,398,000	990,000			48.8

*Not including the Watersheds of Dudley and Dug Pond.

TABLE No. 6. — *Sources from which and Periods during which Water has been drawn for the Supply of the Metropolitan Water District*

From Wachusett Reservoir into the Wachusett Aqueduct

Month	Number of Days during which Water was Flowing	Actual Time		Million* Gallons Drawn
		Hours	Minutes	
January	19	198	22	2,932.7
February	23	302	10	4,486.0
March	26	336	55	4,993.9
April	25	253	5	3,708.2
May	26	279	10	4,057.1
June	20	206	10	3,023.3
July	26	307	47	4,493.2
August	27	354	22	4,427.4
September	24	278	11	4,007.5
October	26	306	41	4,524.5
November	24	248	0	3,624.7
December	25	241	59	3,545.4
Totals	291	138.04 days		47,823.9

*Including quantity supplied Westboro State Hospital.

From Sudbury Reservoir through the Weston Aqueduct to Weston Reservoir

Month	Number of Days during which Water was Flowing	Actual Time		Million Gallons Drawn
		Hours	Minutes	
January	31	743	15	3,636.6*
February	28	670	0	3,254.7
March	31	742	0	3,411.5
April	30	715	45	3,333.0
May	31	739	15	3,361.9
June	30	709	3	3,287.1
July	31	743	18	3,594.1
August	31	743	4	3,705.3
September	30	689	20	3,119.0
October	31	729	15	3,549.1
November	30	720	0	3,147.4
December	31	744	0	3,550.2
Totals	365	362.010 days		40,949.9

*Including 15,300,000 gallons by-passed.

From Framingham Reservoir No. 3 through Sudbury Aqueduct to Chestnut Hill Reservoir

Month	Number of Days during which Water was Flowing	Actual Time		Million Gallons Drawn
		Hours	Minutes	
January	31	744	0	664.5
February	28	672	–	568.6
March	31	744	–	542.0
April	30	719*	–	307.4
May	27	648	–	459.4
June	30	720	–	433.7
July	31	744	–	694.7
August	31	744	–	844.3
September	30	721*	–	604.8
October	31	744	–	631.2
November	30	695	30	584.3
December	31	744	–	711.9
Totals	361	359.979 days		7,046.8

*Daylight Saving change.

TABLE No. 7. — *Average Daily Quantity of Water flowing through Aqueducts in 1935 by Months*

MONTH	Wachusett Aqueduct into Sudbury Reservoir (Gallons)	Weston Aqueduct into Metropolitan District (Gallons)	Sudbury Aqueduct into Chestnut Hill Reservoir (Gallons)	Cochituate Aqueduct into Chestnut H Reservoir (Gallons)
January	94,374,000	117,310,000	21,435,000	–
February	159,986,000	116,239,000	20,307,000	–
March	160,877,000	110,048,000	17,484,000	–
April	123,562,000	111,255,000	10,261,000	–
May	130,648,000	108,448,000	14,819,000	–
June	100,547,000	109,570,000	14,457,000	–
July	144,690,000	115,939,000	22,410,000	–
August	142,555,000	119,526,000	27,235,000	–
September	133,165,000	103,822,000	20,132,000	–
October	145,716,000	114,487,000	20,361,000	–
November	120,600,000	104,914,000	19,477,000	–
December	114,145,000	114,523,000	22,965,000	–
Average	130,793,000	112,191,000	19,306,000	–

TABLE NO. 8. — (*Meter Basis*). *Average Daily Consumption of Water by Districts in the Cities and Towns supplied by the Metropolitan Water Works in 1935*

MONTH	LOW SERVICE	SOUTHERN HIGH SERVICE	SOUTHERN INTERMEDIATE HIGH SERVICE	NORTHERN HIGH SERVICE	SOUTHERN EXTRA HIGH SERVICE	NORTHERN EXTRA HIGH SERVICE	Total District Supplied (Gallons)	Estimated Population	Consumption per Inhabitant (Gallons)
	Portions of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford, Somerville and Watertown (Gallons)	Quincy and Portions of Boston, Milton and Watertown (Gallons)	Portions of Belmont and Watertown (Gallons)	Melrose, Nahant, Revere, Stoneham, Swampscott and Winthrop and Portions of Boston, Chelsea, Everett, Malden, Medford and Somerville (Gallons)	Portions of Boston and Milton (Gallons)	Lexington and Portions of Arlington and Belmont (Gallons)			
January	72,068,700	46,920,700	1,398,700	13,093,000	1,560,000	1,725,900	136,767,000	1,431,820	96
February	71,066,300	46,624,000	1,363,300	13,046,200	1,610,300	1,766,400	135,476,500	1,432,630	95
March	66,119,100	45,243,600	1,385,900	12,632,500	1,588,900	1,724,100	128,694,100	1,433,450	90
April	62,600,600	43,407,700	1,374,600	12,259,700	1,553,900	1,720,600	122,917,100	1,434,260	86
May	62,021,200	43,860,100	1,516,600	12,643,700	1,760,900	2,069,100	123,871,600	1,435,070	86
June	64,995,300	45,511,400	1,495,800	12,769,500	1,742,500	1,980,200	128,494,700	1,435,890	89
July	68,518,000	48,294,000	1,672,800	15,155,900	1,827,300	2,392,400	137,860,400	1,436,700	96
August	68,958.000	49,199,800	1,791,200	15,595,900	1,927,100	2,721,000	140,193,000	1,437,510	98
September	65,593,000	46,555,400	1,470,800	12,916,800	1,635,200	2,172,100	130,343,300	1,438,330	91
October	65,778,600	45,787,200	1,472,500	12,415,100	1,662,100	2,372,100	129,487,600	1,439,140	90
November	65,010,200	44,129,700	1,413,800	11,699,100	1,593,500	2,401,700	126,248,000	1,439,950	88
December	69,926,700	46,680,400	1,377,700	11,696,400	1,572,900	1,889,000	133,143,100	1,440,760	92
For the year	66,879,200	46,025,000	1,479,200	12,999,700	1,670,500	2,080,500	131,134,100	1,436,700	91

TABLE NO. 9. — (*Meter Basis*). *Average Daily Consumption of Water in Cities and Towns supplied by the Metropolitan Water Works in 1935*

City or town	ARLINGTON		BELMONT		BOSTON		CHELSEA		EVERETT		LEXINGTON		MALDEN	
Population	38,800		25,150		821,560		42,340		47,110		10,950		57,200	
MONTH	Gallons		Gallons		Gallons		Gallons		Gallons		Gallons		Gallons	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	2,005,800	52	1,263,600	51	92,729,400	113	3,606,100	85	4,752,600	101	599,800	55	3,923,000	68
February	1,978,200	51	1,250,600	50	91,451,800	112	3,471,900	81	4,744,300	100	640,100	59	3,979,100	69
March	1,960,100	51	1,270,100	51	86,190,900	105	3,256,200	77	4,578,400	97	607,600	56	3,901,300	68
April	1,897,400	49	1,266,000	51	82,265,900	100	3,231,300	76	4,253,100	90	606,000	56	3,819,300	67
May	2,215,600	57	1,456,100	58	82,035,500	100	3,100,400	73	4,197,300	89	709,700	65	3,880,900	68
June	2,165,900	56	1,431,300	57	86,069,600	105	3,197,900	75	4,164,900	88	657,700	60	3,773,700	66
July	2,568,000	66	1,632,200	65	90,654,100	110	3,433,300	81	4,431,000	94	814,900	74	4,171,500	73
August	2,678,300	69	1,741,200	69	91,130,400	111	3,446,500	81	4,568,000	97	1,011,100	92	4,224,200	74
September	2,209,000	57	1,338,200	53	87,913,400	107	3,291,100	78	4,325,900	92	749,200	68	3,922,800	69
October	2,396,100	62	1,356,700	54	87,115,100	106	3,273,100	78	4,392,200	93	707,400	64	3,830,600	67
November	2,483,900	64	1,247,600	49	85,323,000	104	3,252,100	77	4,231,900	90	669,200	61	3,813,700	67
December	2,031,400	52	1,206,100	47	91,564,100	111	3,393,800	81	4,514,100	96	653,100	59	3,833,300	67
For the year	2,218,000	57	1,373,200	55	87,868,000	107	3,329,300	79	4,428,900	94	703,000	64	3,923,300	69

TABLE No. 9. — (*Meter Basis*). *Average Daily Consumption of Water in Cities and Towns, etc.* — Continued.

City or town	MEDFORD		MELROSE		MILTON		NAHANT		QUINCY		REVERE	
Population	61,620		24,380		18,330		1,760		77,430		35,280	
MONTH	Gallons		Gallons		Gallons		Gallons		Gallons		Gallons	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	3,746,200	61	1,548,700	64	810,000	45	220,400	126	4,960,300	64	2,389,200	68
February	3,831,500	62	1,543,700	64	841,200	46	233,600	133	5,051,700	66	2,296,300	65
March	3,798,800	62	1,523,300	63	831,700	46	216,500	124	5,183,200	67	2,135,800	60
April	3,677,900	60	1,500,900	62	817,200	45	235,400	135	4,806,500	62	2,057,800	58
May	3,602,600	59	1,558,700	64	957,200	52	272,600	156	4,976,300	64	2,133,600	60
June	3,752,200	61	1,562,600	64	970,800	53	319,500	181	4,907,000	63	2,118,600	60
July	3,830,900	62	1,764,600	72	971,400	53	413,600	235	5,307,200	69	2,822,900	80
August	3,757,200	61	1,889,900	77	1,084,800	59	451,800	257	5,748,500	74	2,961,600	84
September	3,324,400	54	1,604,300	66	827,700	45	282,200	160	4,890,100	63	2,226,600	63
October	3,431,900	56	1,550,700	63	887,400	48	180,300	102	4,921,100	63	2,081,100	59
November	3,192,600	52	1,403,900	57	840,800	46	137,600	78	4,840,400	62	1,926,400	55
December	3,240,300	52	1,353,000	55	846,800	46	134,800	77	5,037,900	65	1,998,400	57
For the year	3,598,200	58	1,567,800	64	891,300	49	258,500	147	5,054,600	65	2,264,100	64

TABLE No. 9. — (*Meter Basis*). *Average Daily Consumption of Water in Cities and Towns, etc.* — Concluded.

City or town	SOMERVILLE		STONEHAM		SWAMPSCOTT		WATERTOWN		WINTHROP		METROPOLITAN DISTRICT	
Population	100,440		10,920		10,490		35,930		17,010		1,436,700	
MONTH	Gallons		Gallons		Gallons		Gallons		Gallons		Gallons	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	9,253,200	92	723,500	67	1,000,300	95	2,129,500	59	1,105,400	65	136,767,000	96
February	9,207,000	91	775,700	71	891,000	85	2,185,700	61	1,103,100	65	135,476,500	95
March	8,389,900	83	735,600	68	872,400	83	2,162,500	60	1,079,800	64	128,694,100	90
April	7,829,300	78	655,700	60	834,700	80	2,112,000	59	1,050,700	62	122,917,100	86
May	7,831,600	78	698,200	64	937,200	89	2,215,000	62	1,093,100	64	123,871,600	86
June	8,355,300	83	692,200	63	980,000	93	2,202,300	61	1,173,200	69	128,494,700	89
July	9,160,900	91	755,200	69	1,204,800	115	2,369,300	66	1,554,600	91	137,860,400	96
August	9,357,400	93	849,900	78	1,218,800	116	2,431,000	68	1,642,400	97	140,193,000	98
September	8,544,600	85	679,200	62	802,000	76	2,177,800	61	1,234,800	73	130,343,300	91
October	8,794,900	88	674,100	62	703,600	67	2,049,000	57	1,142,300	67	129,487,600	90
November	8,583,200	86	661,400	60	624,200	59	1,940,200	54	1,075,900	63	126,248,000	88
December	9,041,200	90	643,700	59	638,100	61	1,943,500	54	1,069,500	63	133,143,100	92
For the year	8,695,500	87	711,900	65	893,200	85	2,160,200	60	1,195,100	70	131,134,100	91

TABLE No. 10. — *Chemical Examinations of Water from the Wachusett Reservoir, Clinton — 1935*

(Parts per 1,000,000)

Date of Collection	Appearance		Odor		Residue on Evaporation		Ammonia		Hydrogen-ion Concentration	Manganese	Chlorine	Hardness
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	Albuminoid				
Jan. 2	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.008	.082	–	–	2.6	–
Jan. 15	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	38.0	12.0	.008	.092	6.9	–	2.5	14
Jan. 29	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.016	.090	6.7	–	3.2	–
Feb. 12	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	39.0	11.0	.004	.074	6.9	.00	2.5	16
Mar. 12	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.008	.088	6.4	–	2.8	–
Mar. 26	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	37.0	13.0	.002	.082	6.6	–	2.2	16
Apr. 9	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.000	.062	6.7	–	2.6	–
Apr. 23	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	35.0	12.0	.002	.068	6.7	–	2.4	13
May 7	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.008	.092	6.7	.02	2.2	–
May 21	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	36.5	13.0	.008	.168	6.7	.01	2.8	13
June 4	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.008	.100	6.8	–	2.7	–
June 18	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	35.5	13.0	.022	.094	6.7	–	2.6	14
July 9	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.028	.092	6.8	–	2.5	–
July 16	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	37.5	13.5	.016	.080	7.1	–	2.5	11
July 30	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.008	.090	6.9	.00	2.6	–
Aug. 13	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	34.0	10.0	.008	.118	–	.00	2.6	14
Sept. 3	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.008	.094	7.0	–	2.5	–
Sept. 17	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	39.0	13.0	.012	.196	6.8	–	2.8	10
Oct. 1	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.010	.092	6.9	–	2.6	–
Oct. 22	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	34.0	12.0	.006	.068	6.6	–	2.6	11
Oct. 29	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.006	.064	6.7	.00	2.6	–
Dec. 3	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	37.0	13.0	.072	.020	6.8	–	3.0	14
Dec. 17	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.004	.070	–	–	3.0	–
Average	.....	.....	.....	.....	36.6	12.3	.012	.090	6.8	.01	2.6	13

TABLE No. 11. — *Chemical Examinations of Water from the Sudbury Reservoir — 1935*

(Parts per 1,000,000)

Date of Collection	Appearance		Odor		Residue on Evaporation		Ammonia		Hydrogen-ion Concentration	Manganese	Chlorine	Hardness
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	Albuminoid				
Jan. 2	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.008	.092	–	–	3.0	–
Feb. 5	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	40.0	14.0	.016	.110	6.8	.00	3.2	17
Mar. 12	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.026	.106	6.6	–	2.5	–
Apr. 10	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	39.0	16.5	.002	.118	6.8	–	3.2	17
May 9	V. slight	V. slight	Faintly vegetable	Distinctly musty	–	–	.052	.126	6.7	.01	3.2	–
June 4	V. slight	V. slight	Faintly vegetable	Faintly sweetish	42.5	16.0	.022	.156	6.8	–	3.2	17
July 9	Slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.012	.148	6.8	–	3.2	–
July 30	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	44.0	16.0	.004	.134	6.9	.01	3.0	16
Sept. 3	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.034	.084	7.2	–	2.6	–
Oct. 1	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	35.0	12.0	.016	.072	6.7	–	2.5	13
Nov. 5	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.008	.122	6.8	.01	2.6	–
Dec. 4	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	36.0	11.0	.008	.126	–	–	3.2	14
Average	.....	.....	.....	.....	39.4	14.3	.017	.116	6.8	.01	2.9	16

TABLE No. 12. — *Chemical Examinations of Water from Spot Pond, Stoneham — 1935*

(Parts per 1,000,000)

Dec. 31, 1934	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.006	.114	–	–	4.4	–
Feb. 11, 1935	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	39.5	12.0	.004	.076	6.9	.00	4.0	17
Mar. 11	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.014	.102	6.7	–	3.8	–
Apr. 8	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	40.5	16.5	.000	.092	6.7	–	3.8	17
May 13	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.002	.114	6.7	.02	2.8	–
June 2	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	39.5	19.0	.004	.138	6.8	–	3.8	17
July 15	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.008	.106	7.0	–	4.0	–
Aug. 5	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	38.5	12.0	.008	.126	6.9	.01	4.0	16
Sept. 3	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.002	.120	7.1	–	3.8	–
Sept. 30	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	42.0	17.0	.002	.096	6.8	–	4.0	18
Oct. 28	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.034	.106	6.6	–	3.8	–
D... 2	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	39.0	14.0	.004	.112	6.8	–	3.9	14

(Parts per 1,000,000)

Date of Collection	Appearance		Odor		Residue on Evaporation		Ammonia		Hydrogen-ion Concentration	Manganese	Chlorine	Hardness
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	Albuminoid				
Jan. 2[1]	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	80.5	24.5	.196	.170	–	–	9.0	34
Jan. 2	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	74 5	22.0	.106	.160	–	–	8.0	30
Jan. 30	V. slight	V. slight	V faintly vegetable	Faintly vegetable	–	–	.436	.144	6.7	–	9.2	–
Mar. 13	V. slight	V. slight	Faintly vegetable	Faintly unpleasant	83.0	24.0	.710	.070	6.5	–	8.4	31
Apr. 12	V. slight	V. slight	V faintly vegetable	V. faintly vegetable	–	–	.414	.132	6.7	–	7.8	–
June 5	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	80.0	28.0	.288	.176	6.8	–	7.8	30
July 31	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.082	.128	7.2	.00	8.0	–
Oct. 2	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	73.0	21.0	.014	.134	7.0	–	7.8	22
Oct. 30	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.052	.106	6.8	.05	7.8	–
Dec. 3	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	77.0	22.0	.072	.160	–	–	8.0	30
Average	.....	.....	.....	.....	78.0	23.6	.237	.138	6.8	.02	8.18	30

[1] At Pond St. Bridge.

TABLE No 14. — *Chemical Examinations of Water from a Tap at the State House, Boston — 1935*

(Parts per 1,000,000)

Jan. 4	V. slight	V slight	V. faintly vegetable	V. faintly vegetable	–	–	.034	.088	–	–	4.4	–
Jan. 31	V. slight	V slight	V. faintly vegetable	V. faintly vegetable	44.0	16.0	.052	.094	6.7	–	4.0	18
Mar. 11	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.032	.092	6.7	–	3.8	–
Apr. 8	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	45.0	17.5	.052	.068	6.7	–	3.8	17
May 6	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.056	.102	6.7	.00	4.2	–
June 3	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	48.0	20.5	.048	.116	6.7	–	4.6	17
July 8	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.016	.116	6.5	–	4.0	–
July 29	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	40.5	13.5	.012	.090	6.9	.03	4.0	18
Sept. 4	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	–	–	.004	.100	7.0	–	4.0	–
Sept. 30	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	39.0	11.0	.012	.088	6.7	–	4.0	13
Oct. 30	V. slight	V. slight	V. faintly vegetable	Faintly vegetable	–	–	.006	.104	6.6	.02	3.8	–
Dec. 3	V. slight	V. slight	V. faintly vegetable	V. faintly vegetable	41.0	15.0	.002	.086	6.7	–	3.8	17
Average	.....	.....	.....	.....	42.9	15.6	.027	.095	6.7	.01	4.0	17

TABLE NO. 15. — *Chemical Examinations of Water from a Faucet in Boston, 1898–1935*

(Parts per 1,000,000)

YEAR	COLOR	RESIDUE ON EVAPORATION		AMMONIA				CHLORINE	OXYGEN CONSUMED	HARDNESS
					ALBUMINOID					
	Platinum Standard	Total	Loss on Ignition	Free	Total	Dissolved	Suspended			
1898	40	41.9	16.0	.008	.152	.136	.016	2.9	4.4	14
1899	28	37.0	13.0	.006	.136	.122	.014	2.4	3.5	11
1900	29	38.0	12.0	.012	.157	.139	.018	2.5	3.8	13
1901	29	44.3	16.4	.013	.158	.142	.016	3.0	4.2	17
1902	30	39.3	15.6	.016	.139	.119	.020	2.9	4.0	17
1903	29	39.8	15.0	.013	.125	.110	.015	3.0	3.9	15
1904	23	39.3	15.9	.023	.139	.121	.018	3.4	3.7	15
1905	24	38.6	15.9	.020	.145	.124	.021	3.5	3.5	14
1906	24	38.6	13.9	.018	.159	.134	.025	3.4	3.6	13
1907	22	38.3	14.0	.013	.129	.109	.020	3.3	3.2	13
1908	19	35.0	13.5	.011	.115	.092	.024	3.3	2.6	12
1909	18	34.6	14.3	.011	.128	.103	.025	2.8	2.5	13
1910	14	30.5	12.4	.013	.118	.102	.016	2.8	2.2	11
1911	25	41.8	16.6	.015	.156	.128	.029	3.8	3.3	14
1912	17	38.6	12.3	.018	.154	.119	.034	3.6	2.9	17
1913	13	39.6	11.5	.014	.150	.120	.026	3.5	2.6	15
1914	14	41.2	11.9	.014	.138	.116	.022	3.9	2.5	14
1915	16	37.3	10.4	.015	.157	.134	.023	3.8	2.5	14
1916	18	45.3	18.5	.013	.133	.107	.026	3.6	–	14
1917	15	44.5	16.8	.015	.142	.124	.018	3.3	–	13
1918	18	38.9	14.5	.019	.154	.128	.026	2.9	–	14
1919	20	42.8	14.1	.010	.130	.108	.022	3.6	–	15
1920	17	42.3	13.5	.012	.112	.097	.014	3.3	–	15
1921	13	38.0	13.9	.006	.104	.089	.015	2.5	–	14
1922	16	39.8	15.5	.011	.097	.080	.017	3.0	–	18
1923	15	39.0	14.5	.011	.100	.090	.010	2.6	–	15
1924	12	41.0	16.0	.011	.109	.084	.025	2.8	–	15
1925	9	39.8	16.2	.013	.109	.093	.016	2.9	–	15
1926	10	41.8	16.8	.015	.115	.092	.023	3.2	–	15
1927	22	44.7	16.2	.013	.111	.101	.018	3.4	–	19
1928	27	44.3	17.2	.011	.124	.106	.018	3.7	–	15
1929	21	42.6	17.1	.007	.106	.074	.032	3.0	–	13
1930	16	40.7	13.4	.012	.071	.055	.016	3.4	–	13
1931	24	48.8	16.4	.013	.097	.072	.025	4.5	–	20
1932	19	43.5	16.0	.007	.102	.075	.027	3.9	–	16
1933	19	41.5	14.1	.010	.095	.069	.026	4.0	–	19
1934	19	40.3	13.8	.013	.083	.062	.021	3.8	–	19
1935	17	42.9	15.6	.027	.095	6.7[1]	.025[2]	4.0	–	17

[1] Hydrogen-ion Concentration. [2] Manganese.

TABLE No. 16. — *Number of Bacteria per Cubic Centimeter in Water from Various Parts of the Metropolitan Water Works, 1898–1935. (Averages of Weekly Determinations.)*

Year	Chestnut Hill Reservoir			Southern Service Taps	
	Sudbury Aqueduct Terminal Chamber	Cochituate Aqueduct	Effluent Gate House No. 2	Low Service 182 Boylston Street Boston	High Service 20 Somerset Street Boston
1898	207	145	111	96	–
1899	224	104	217	117	123
1900	248	113	256	188	181
1901	225	149	169	162	168
1902	203	168	121	164	246
1903	76	120	96	126	243
1904	347	172	220	176	355
1905	495	396	489	231	442
1906	231	145	246	154	261
1907	147	246	118	130	176
1908	162	138	137	136	148
1909	198	229	119	150	195
1910	216	–	180	178	213
1911	205	204	151	175	197
1912	429	450	227	249	259
1913	123	243	157	119	140
1914	288	–	252	174	220
1915	163	–	128	117	134
1916	128	–	85	102	105
1917	178	112	119	119	141
1918	1,163	168	705	317	544
1919	92	85	100	70	84
1920	148	86	108	113	112
1921	103	–	83	92	92
1922	163	–	153	160	172
1923	229	–	178	217	230
1924	137	–	96	150	160
1925	144	251	120	155	174
1926	167	–	118	130	137
1927	119	185	70	81	101
1928	144	32	86	106	106
1929	128	–	84	130	144
1930	107	–	66	105	123
1931	82*	4*	43	80	101
1932	121*	–	63	123	147
1933	20*	–	15	40	45
1934	10*	–	26	42	31
1935	4*	–	32	35	18

* After the water was sterilized with chlorine.

TABLE No. 17. — *Colors of Water from Various Parts of the Metropolitan Water Works in 1935*

(Platinum Standard)

MONTH	WACHUSETT [1] RESERVOIR						WACHUSETT AQUEDUCT	SUDBURY [1] RESERVOIR			FRAMINGHAM RESERVOIR No. 3	LAKE [1] COCHITUATE			CHESTNUT HILL RESERVOIR			SPOT [1] POND	FELLS RESERVOIR	SOUTHERN SERVICE		NORTHERN SERVICE	
	Quinapoxet River Influent	Stillwater River Influent	Worcester St. Bridge	Surface near Dam	Mid-depth near Dam	Bottom near Dam	Lower End of Open Channel	Surface near Dam	Mid-depth near Dam	Bottom near Dam	Mid-depth near Dam	Surface near Gate House	Mid-depth near Gate House	Bottom near Gate House	Inlet Sudbury Aqueduct	Inlet Cochituate Aqueduct	Effluent Gate House No. 2	Mid-depth near East Gate House	Effluent Gate House	Tap at 182 Boylston St. Boston Low Service	Tap at 20 Somerset St. Boston High Service	Tap at Glenwood Yard Medford Low Service	Tap at Glenwood Yard Medford High Service
January	37	31	31	15	15	14	37	19	19	19	22	32	31	28	20	–	20	12	12	18	18	17	12
February	38	32	33	16	16	16	18	21	21	20	22	43	30	34	20	–	19	14	14	19	19	18	14
March	35	31	32	16	16	16	20	21	21	22	21	38	30	34	20	–	18	14	14	19	19	19	15
April	38	35	31	17	17	17	22	22	22	22	22	36	37	37	18	–	17	13	13	20	20	19	14
May	49	42	32	17	17	17	20	22	22	22	23	33	33	34	19	–	17	13	13	21	20	20	13
June	71	58	35	17	17	17	24	22	22	22	24	29	29	38	21	–	17	13	13	20	20	19	13
July	59	52	27	17	18	17	21	25	24	22	23	24	28	71	22	–	15	12	12	20	20	19	12
August	33	29	17	15	16	16	18	19	19	20	19	18	23	116	19	–	16	13	13	17	16	16	13
September	39	27	16	15	15	16	17	16	16	17	17	16	24	127	16	–	14	12	12	15	15	18	12
October	39	20	15	14	15	15	15	15	16	15	16	17	22	148	15	–	14	12	12	15	15	14	13
November	38	28	15	14	15	15	15	15	15	15	15	22	23	89	14	–	14	13	13	15	14	14	13
December	47	32	30	13	13	14	15	15	15	15	13	23	23	23	13	–	12	12	12	13	13	13	12
Mean	44	35	26	16	16	16	20	19	19	19	20	28	28	65	18	–	16	13	13	18	17	17	13

[1] Mid-depth and bottom colors are averages of bi-weekly determinations, all others are averages of weekly determinations.

Table No. 18. — *Temperatures of Water from Various Parts of the Metropolitan Water Works in 1935*

(The temperatures are taken at the same places and times as the samples for microscopical examination, the depth at places of observations from high-water mark.)
[Degrees Fahrenheit]

Month	Wachusett [1] Reservoir Depth at Place of Observation Near Dam 107 Feet			Wachusett Aqueduct	Sudbury [1] Reservoir Depth at Place of Observation Near Dam 54.5 Feet			Framingham [1] Reservoir No. 3 Depth at Place of Observation Near Dam 20.5 Feet			Lake [1] Cochituate Depth at Place of Observation Near Gate House 62.0 Feet			Chestnut Hill Reservoir	Spot Pond [1] Depth at Place of Observation Near East Gate House 28.0 Feet			Southern Service		Northern Service	
	Surface	Mid-depth	Bottom	Lower End of Open Channel	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	Effluent Gate House No. 2	Surface	Mid-depth	Bottom	Tap at 182 Boylston St. Boston Low Service	Tap at 20 Somerset St. Boston High Service	Tap at Glenwood Yard Medford Low Service	Tap at Glenwood Yard Medford High Service
January	33.4	34.0	34.1	34.6	34.3	35.3	37.5	34.2	36.0	35.7	35.6	36.5	–	36.2	33.8	33.0	34.5	38.1	38.0	39.2	39.3
February	33.2	34.3	35.6	34.4	33.5	34.8	36.5	33.5	34.0	35.0	35.5	38.8	36.4	37.0	34.1	35.5	35.0	37.7	37.8	37.6	39.3
March	34.8	35.2	36.3	36.0	35.5	38.0	36.0	36.4	36.0	39.0	37.8	38.4	–	38.4	36.2	36.8	36.8	39.0	39.1	38.5	39.5
April	40.9	40.1	40.0	46.7	44.7	44.0	43.5	42.8	45.7	41.0	46.9	46.1	43.9	46.2	43.7	43.3	43.0	46.2	46.7	46.1	43.6
May	54.2	53.5	47.3	53.1	56.0	54.8	56.5	56.5	59.8	58.0	58.3	54.1	49.4	57.5	54.7	53.0	54.3	57.4	57.5	54.5	50.4
June	62.6	59.7	54.3	56.3	65.8	65.0	60.0	64.6	63.5	63.0	68.0	53.9	48.9	66.5	65.3	64.5	61.3	64.9	66.0	63.5	57.3
July	73.9	63.4	57.1	56.9	75.7	67.3	61.5	73.1	–	72.4	77.1	54.4	50.7	74.9	74.5	71.3	69.5	72.7	72.9	71.5	67.9
August	75.8	64.6	59.1	61.2	74.6	71.3	66.0	74.8	76.0	72.5	76.1	53.9	50.1	74.0	74.6	75.5	71.5	74.7	74.8	74.0	70.6
September	63.4	64.9	50.3	57.4	66.9	65.3	66.3	65.3	67.0	64.8	67.7	54.6	49.1	66.8	66.1	67.8	66.8	68.7	68.9	68.4	65.8
October	57.8	56.4	52.8	55.6	57.6	58.5	59.2	56.4	57.0	55.5	58.1	53.7	48.3	57.6	58.1	58.5	57.5	60.7	61.0	61.4	59.9
November	50.5	51.4	49.6	48.9	48.4	48.2	49.0	47.5	46.5	49.0	51.7	50.6	45.2	50.4	50.0	48.4	52.3	53.6	53.3	54.3	54.1
December	39.8	39.0	39.5	37.4	37.4	37.3	36.5	36.2	–	36.0	38.8	40.0	40.3	38.5	37.6	36.5	39.5	41.3	41.9	43.4	44.5
Mean	51.7	49.7	46.3	48.2	52.5	51.7	50.7	51.8	52.2	51.8	54.3	47.9	46.2	53.7	52.4	52.0	51.8	54.6	54.8	54.4	52.7

[1] Mid-depth and bottom temperatures are averages of bi-weekly determinations, all others are averages of weekly determinations.

TABLE No. 19. — *Length of Metropolitan Water Works Main Lines and Connections and Number of Valves set in Same, December 31, 1935*

(Pipes are of cast iron unless otherwise noted)

	Diameter of pipes in inches																		
	60	56	54	48	42	40	38	36	30	24	20	16	14	12	10	8	6	4	Total
Total length owned and operated Dec. 31, 1934 (feet)	130,179	17,634	13,486	217,814	10,869	6,887	7,274	64,009	78,000	101,572	132,428	79,629	26	29,849	710	1,964	1,279	58	893,667
Gate Valves in same	22	2	5	60	3	3	–	77	49	71	96	142	1	157	20	30	27	2	767
Air Valves in same	190	9	12	132	6	5	6	49	46	60	90	42	–	10	1	–	–	–	658
Length laid or relaid during 1935 (feet)	–	–	–	10,218	864	–	–	82	375	–	12,092	129	–	81	14	–	5	–	23,860
Gate Valves in same	–	–	–	2	–	–	–	3	–	–	7	6	–	1	2	–	2	–	23
Air Valves in same	–	–	–	17	4	–	–	–	–	–	6	–	–	–	–	–	–	–	27
Length abandoned during 1935 (feet)	–	–	–	54	–	–	–	–	–	–	20	68	–	4	–	–	85	–	231
Gate Valves in same	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	3	–	5
Air Valves in same	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Length owned and operated Dec. 31, 1935 (ft.)	130,179 [1]	17,634 [2]	13,486 [2]	227,978 [3]	11,733 [4]	6,887	7,274 [2]	64,091 [5]	78,375 [6]	101,572 [7]	144,500 [8]	79,690 [9]	26	29,926 [10]	724	1,964	1,199	58	917,296 [11]
Gate Valves in same	22	2	5	62	3	3	–	80	49	71	103	146	1	158	22	30	26	2	785
Air Valves in same	190	9	12	149	10	5	6	49	46	60	96	42	–	10	1	–	–	–	685

[1] Includes 2,035 feet of 76-inch concrete-lined pressure tunnel, 363 feet of 76-inch mortar-lined and concrete-covered steel pipe; 21 feet of 76-inch cast-iron pipe; 85 feet of 60-inch concrete-covered steel pipe and 82,624 feet of 60-inch steel pipe.
[2] Steel pipe.
[3] Includes 12,336 feet of steel pipe.
[4] Includes 1,853 feet of steel pipe.
[5] Includes 286 feet of steel pipe.
[6] Includes 15,512 feet of mortar-lined and covered wrought-iron pipe; 7,213 feet of cement-lined cast-iron pipe and 19,437 feet of steel pipe.
[7] Includes 55 feet of steel pipe.
[8] Includes 26,548 feet of cement-lined cast-iron pipe and 1,121 feet of steel pipe.
[9] Includes 1,856 feet of cement-lined cast-iron pipe.
[10] Includes 627 feet of cement-lined cast-iron pipe.
[11] 173.73 miles.

TABLE NO. 20. — *Length of Metropolitan Water Works Hydrant, Blow-off and Drain Pipes December 31, 1935*

(All pipes are of cast iron)

	DIAMETER OF PIPES IN INCHES								
	24	20	16	12	10	8	6	4	Total
Total length in use Dec. 31, 1934 (feet)	352	292	4,270	7,479	220	1,315	4,557	1,928	20,413
Valves in same	–	–	60	127	2	20	113	54	376
Length laid or relaid in 1935 (feet)	–	–	–	227	–	–	191	–	418
Valves in same	–	–	–	8	–	–	4	–	12
Length abandoned in 1935 (feet)	–	–	–	–	–	–	–	–	–
Valves in same	–	–	–	–	–	–	3	–	3
Total length in use Dec. 31, 1935 (feet)	352	292	4,270	7,706	220	1,315	4,748	1,928	20,831 [1]
Valves in same	–	–	60	135	2	20	114	54	385

[1] 3.95 miles.

TABLE No. 21. — *Length of Metropolitan Water Works Main Lines and Connections and Water Pipes, Four Inches in Diameter and Larger, in the Several Cities and Towns in the Metropolitan Water District, Dec. 31, 1935*

By Whom Owned	Inches																		Totals	
	60	56	54	48	42	40	38	36	30	24	20	18	16	14	12	10	8	6	4	Feet	Miles
Met. Water Wks.	130,179	17,634	13,486	227,978	11,733	6,887	7,274	64,091	78,375	101,572	144,500	–	79,690	26	29,926	724	1,964	1,199	58	917,296	173.73
Arlington	–	–	–	–	–	–	–	–	–	–	–	–	2,388	–	46,129	38,197	105,351	256,691	996	449,752	85.18
Belmont	–	–	–	–	–	–	–	–	–	–	–	–	–	–	15,922	49,466	76,034	213,699	269	355,390	67.31
Boston	–	–	–	41,385	15,980	9,599	–	44,448	90,623	83,549	86,581	–	311,139	4,966	1,731,170	453,398	1,123,514	1,045,000	72,206	5,113,558	968.48
Brookline	–	–	–	–	–	–	–	–	–	10,007	27,292	–	26,044	12,880	65,953	85,211	109,299	278,264	31	614,981	116.47
Chelsea	–	–	–	–	–	–	–	–	–	–	4,517	–	5,215	–	6,012	41,243	36,296	158,936	2,432	254,651	48.23
Everett	–	–	–	–	–	–	–	–	–	2,484	2,900	–	6,948	6,619	8,306	47,790	40,543	175,729	20,469	311,788	59.05
Lexington	–	–	–	–	–	–	–	–	–	–	–	–	4,382	–	45,787	17,405	71,367	194,733	26,933	360 607	68.30
Malden	–	–	–	–	–	–	–	–	–	–	–	–	12,759	11,142	99,376	38,493	122,199	236,382	45,251	565,602	107.12
Medford	–	–	–	–	–	–	–	–	–	–	673	–	6,775	9,598	42,478	49,060	140,672	307,116	4,436	560,808	106.21
Melrose	–	–	–	–	–	–	–	–	–	–	–	–	12,464	3,024	26,223	27,200	27,814	211,964	49,199	357,888	67.78
Milton	–	–	–	–	–	–	–	–	–	–	–	–	4,579	72	93,394	23,997	95,045	228,477	7,518	453,082	85.81
Nahant	–	–	–	–	–	–	–	–	–	–	–	–	–	10,444	5,550	11,550	13,643	38,686	58,068	137,941	26.13
Newton	–	–	–	–	–	–	–	–	–	–	36,250	–	15,023	–	104,588	8,410	203,797	724,726	57,424	1,150,218	217.84
Quincy	–	–	–	–	–	–	–	–	–	–	15,450	–	33,723	–	83,699	101,804	253,802	453,165	62,832	1,004,475	190.24
Revere	–	–	–	–	–	–	–	–	–	–	–	–	10,600	7,416	39,343	36,069	73,592	145,281	55,155	367,456	69.59
Somerville	–	–	–	–	–	–	–	–	–	–	5,577	367	10,094	7,942	122,133	97,458	114,423	206,856	15,244	580,094	109.87
Stoneham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10,725	13,539	16,103	119,140	18,503	178,010	33.72
Swampscott	–	–	–	–	–	–	–	–	–	–	–	–	–	3,721	6,714	21,800	7,375	121,394	5,269	166,273	31.49
Watertown	–	–	–	–	–	–	–	–	–	–	–	–	2,991	7,276	11,834	45,193	95,468	182,283	3,782	348,827	66.07
Winthrop	–	–	–	–	–	–	–	–	–	–	5,151	–	4,327	–	5,302	24,198	85,991	53,717	14,611	193,297	36.61
Total feet	130,179	17,634	13,486	269,363	27,713	16,486	7,274	108,539	168,998	197,612	328,891	367	549,141	85,126	2,600,564	1,232,205	2,814,292	5,353,438	520,686	14,441,994	–.
Total miles	24.65	3.34	2.55	51.02	5.25	3.12	1.38	20.56	32.01	37.43	62.29	.07	104.00	16.12	492.53	233.37	533.01	1,013.91	98.62	–	2,735.23

TABLE NO. 22. — *Number of Service Pipes, Meters, Per Cent of Services Metered, Fire Services and Fire Hydrants in the Several Cities and Towns in the Metropolitan Water District, December 31, 1935.*

CITY OR TOWN	Services	Meters	Per Cent of Services Metered	Services Used for Fire Purposes Only	Fire Hydrants
Arlington	7,391	7,389	99.97	33	886
Belmont	4,818	4,818	100.00	13	513
Boston	101,566	101,566	100.00	3,124	12,092
Chelsea	5,808	5,808	100.00	143	390
Everett	7,408	7,408	100.00	55	631
Lexington	2,531	2,531	100.00	17	530
Malden	9,766	9,766	100.00	74	739
Medford	10,691	10,691	100.00	35	1,082
Melrose	6,038	6,038	100.00	25	476
Milton	4,225	4,225	100.00	3	723
Nahant	919	919	100.00	2	145
Quincy	17,038	17,038	100.00	53	1,803
Revere	6,409	6,400	99.86	12	488
Somerville	13,962	13,804	98.87	126	1,408
Stoneham	2,425	2,425	100.00	3	196
Swampscott	2,751	2,751	100.00	7	288
Watertown	6,142	6,142	100.00	41	709
Winthrop	3,860	3,860	100.00	7	386
District Supplied	213,748	213,579	99.92	3,773	23,485
Brookline	8,008	8,003	99.94	46	1,139
Newton	15,114	15,114	100.00	100	1,643
Total District	236,870	236,696	99.93	3,919	26,267

TABLE No. 23. — *Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base for Each Month at Stations on Metropolitan Water Works during 1935*

1935 MONTH	LOW SERVICE															
	WATERTOWN, PLEASANT STREET AT WALTHAM LINE		BELMONT WATER WORKS SHOP, WAVERLEY STREET		BOSTON, BOWDOIN SQUARE ENGINE HOUSE		ALLSTON ENGINE HOUSE, HARVARD STREET		MEDFORD, NEAR MYSTIC RESERVOIR		SOMERVILLE PUBLIC LIBRARY, HIGHLAND AVENUE		MALDEN WATER WORKS SHOP, GREEN STREET		CHELSEA COURT HOUSE	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
January	195	191	192	178	150	131	176	168	171	166	164	148	165	155	155	139
February	195	191	194	179	150	134	175	168	172	165	164	153	165	158	155	143
March	194	191	192	183	152	137	175	167	168	165	162	150	164	156	155	142
April	195	191	194	181	150	131	175	168	173	165	164	153	165	156	158	143
May	196	188	194	169	150	134	175	168	172	165	165	154	165	156	155	143
June	195	191	194	154	152	134	179	170	177	167	173	156	166	149	157	137
July	195	185	194	155	153	141	179	168	177	166	173	155	165	149	155	132
August	194	186	185	150	152	138	178	168	175	166	167	155	164	156	158	142
September	196	186	192	171	152	141	176	166	174	162	167	155	164	156	158	139
October	195	185	187	169	152	141	177	168	174	164	169	155	165	158	158	144
November	195	191	192	178	152	138	177	168	173	162	169	155	165	149	158	137
December	195	188	187	176	150	141	175	168	171	164	165	154	165	156	158	140
Averages	195	189	191	170	151	137	176	168	173	165	167	154	165	155	157	140

TABLE No. 23. — *Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base, etc.,* — Concluded.

1935 MONTH	SOUTHERN HIGH SERVICE								NORTHERN HIGH SERVICE								NORTHERN EXTRA HIGH SERVICE	
	BOSTON, BOWDOIN SQ. ENGINE HOUSE		MILTON, ADAMS ST. AT CANTON AVENUE		QUINCY, FORBES HILL TOWER		QUINCY WATER WORKS SHOP		SOMERVILLE WATER WORKS SHOP		REVERE WATER WORKS SHOP, BROADWAY		LYNN ENGINE HOUSE, UNION SQUARE		WINTHROP TOWN HALL, HERMAN STREET		LEXINGTON, MASSACHUSETTS AVE. AT ARLINGTON LINE	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
January	245	219	246	223	242	216	235	214	268	243	269	262	263	230	200	173	438	429
February	245	221	246	223	240	216	235	214	268	243	269	258	253	229	[2]203	170	438	429
March	245	219	247	223	242	215	235	214	268	240	269	255	254	240	200	170	438	429
April	245	224	246	224	244	216	239	215	263	229	269	255	257	233	191	170	441	429
May	245	221	246	216	244	205	239	200	259	219	269	251	263	196	187	170	441	422
June	245	218	246	221	244	209	243	206	266	212	267	244	252	201	190	170	441	427
July	242	215	246	209	242	193	239	186	254	231	262	241	240	172	191	166	441	422
August	242	215	246	209	243	189	239	186	261	219	265	239	247	155	194	174	441	418
September	245	221	246	209	243	205	239	205	268	226	265	253	253	226	196	184	441	429
October	247	226	246	214	244	208	239	207	[1]265	237	267	258	263	224	196	188	441	425
November	245	201	246	224	244	216	239	215	263	237	269	258	266	238	199	189	441	427
December	245	201	246	223	244	215	239	212	260	237	267	258	266	253	198	189	441	429
Averages	245	217	246	218	243	209	238	206	264	231	267	253	256	216	195	176	440	426

[1] Gage moved to Broadway at Cedar Street.
[2] Local standpipe out of service.

Appendix No. 6

Information relating to areas, populations, local sewer connections and other data for the Metropolitan sewerage districts appears in the following table:

North Metropolitan Sewerage District

Area (Square Miles)	Estimated Total Population	Miles of Local Sewer Connected	Estimated Population Contributing Sewage	Ratio of Contributing Population to Total Population (Per Cent)	Connections made with Metropolitan Sewers	
					Public	Special
111.41	746,910	999.52	696,470	93.2	388	751
South Metropolitan Sewerage District						
218.19	862,620	1,057.01	643,690	74.6	216	88
Both Metropolitan Sewerage Districts						
329.60	1,609,530	2,056.53	1,340,160	83.3	604	839

Of the estimated gross population of 1,609,530 on December 31, 1935, 1,340,160 representing 83.3 per cent, were on that date contributing sewage to the Metropolitan sewers, through a total length of 2,056.53 miles of local sewers owned by the individual cities and towns of the districts.

These sewers are connected with the Metropolitan Systems by 604 public and 839 special connections. During the current year there has been an increase of 22.73 miles of local sewers connected with the Metropolitan Systems, and 11 public and 12 special connections have been added.

North Metropolitan Sewerage System

Location, Length and Sizes of Sewers, with Public and Special Connections

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1935	Special Connections	
				Character or Location of Connection	Number in Operation
Boston:					
Deer Island	4′0″ to 9′0″	1.653	4	Doctor's House	1
				Shoe Factory	1
East Boston	9′0″ to 1′0″	5.467	25	Middlebrook Wool-combing Co.	1
				Navy Yard	9
Charlestown	6′7″ x 7′5″ to 1′0″	3.292	15	Private building	1
				H. P. Hood & Sons, Inc.	1
				Club House	1
Winthrop	9′0″	2.864	14	Fire Department station	1
				Private building	1
				Bakery	1
				Restaurant	1
				Rendering Works	1
				Metropolitan Water Works blow-off	1
Chelsea	8′4″ x 9′2″ to 15″	5.230	14	Chelsea Water Works blow-offs	2
				Naval Hospital	1
				U. S. Lighthouse Service	1
				Metropolitan Water Works blow-off	1
				Cameron Appliance Co.	1
				Shultz-Goodwin Co.	1
Everett	8′2″ x 8′10″ to 4′8″ x 5′1″	2.925	10	Andrews-Wasgatt Co.	1
				National Metallic Bed Co.	1
				Linoide Co.	1
				Factory	2
				New England Structural Co.	1
				Beacon Oil Co.	1
				Everett Factories and Terminal Corp.	1
Lexington [1]	1′3″ to 2′3″	.002	2	— — — —	—
				Metropolitan Water Works blow-offs	5
Malden	4′6″ x 4′10″ to 1′0″	5.844 [2]	37	Provate buildings	239 [3]
				Factory	1
				Bakery	1
				Swift & Co.	1
				Holy Cross Cemetery office	1
Melrose	4′6″ x 4′10″ to 10″	6.099 [4]	43	Private buildings	133 [5]
				Factory	1
				Railroad station	1
				Park Department bath-house	1
				Harvard dormitories	2
				Slaughterhouse	1
Cambridge	5′2″ x 5′9″ to 1′3″	7.899	54	City Hospital	3
				Street Railway machine shop	1
				Private buildings	5
				Factory building	1
				Tannery	1
				Slaughterhouses (3)	1
				Carhouse	1
Somerville	6′5″ x 7′2″ to 10″	3.577	16	Somerville Water Works blow-off	1
				Street railway power house	1
				Stable	1
				Rendering works	1
				Railroad scale pit	1
				Private building	1

[1] The Metropolitan Sewers extend but a few feet into the town of Lexington.

[2] Includes 1.84 miles of sewer purchased from the city of Malden.

[3] Mostly buildings connected with sewers formerly belonging to city of Malden but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 215 of the Acts of 1898 and by the Metropolitan Water and Sewerage Board in accordance with Chapter 512 of the Acts of 1911 and made parts of the North Metropolitan Sewerage System.

[4] Includes 0.736 of a mile of sewer purchased from the city of Melrose.

[5] Mostly buildings connected with a sewer formerly belonging to the city of Melrose but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 414 of the Acts of 1896 and with a sewer extension built in accordance with Chapter 436 of the Acts of 1897 by the Metropolitan Sewerage Commission as an outlet for part of the town of Stoneham and made parts of the North Metropolitan Sewerage System.

North Metropolitan Sewerage System — *Concluded*

Location, Length and Sizes of Sewers, with Public and Special Connections — Concluded

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1935	Special Connections: Character or Location of Connection	Special Connections: Number in Operation
Medford	6′0″ x 6′3″ to 10″	7.530	28	Metropolitan Water Works blow-offs	8
				Armory building	1
				Private buildings	9
				Stable	1
				Police substation	1
				Tanneries	6
				Private buildings	13
				Gelatine factory	1
				Watch-hand factory	1
				Stable	1
Winchester	4′6″ to 1′3″	10.420	35	Railroad station	3
				Felt works	1
				Town Hall	1
				Bay State Saw & Tool Co.	1
				Whitney Machine Co.	1
				Metropolitan Sewerage Division	1
				Water and Sewer Department	1
Stoneham	1′8″ to 10″	2.333	11	– – – –	–
Woburn	2′6″ x 2′7″ to 1′3″	1.186	4	Atlantic Gelatine Co.	1
				Glue factory	4
				Private building	1
Arlington	3′0″ x 3′6″ to 10″	6.723[1]	66	Private buildings	238[2]
				Railroad station	1
				Car house	3
				Post office	1
				Town of Arlington garage	1
				Town of Arlington workshop	1
				The Theodore Schwamb Co., Inc.	2
				Arlington Gas Light Co.	1
				Edison Transformer Station	1
				Arlington High School	1
				Laundry	1
Belmont	1′3″ to 2′6″	0.008	5	– – – –	–
Wakefield	3′0″ to 2′0″ x 2′3″	0.703	1	Private building	1
Revere	4′0″ to 15″	0.136	3	– – – –	–
Reading	1′4″ to 3′0″	0.055	1	– – – –	–
		73.946[3]	388		751

[1] Includes 2.631 miles of sewer purchased from the town of Arlington.

[2] Mostly buildings connected with a sewer formerly belonging to the town of Arlington but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 520 of the Acts of 1897 and made a part of the North Metropolitan Sewerage System.

[3] Includes 2.787 miles of Old Mystic Valley Sewer in Medford and Winchester, running parallel with the Metropolitan Sewer.

South Metropolitan Sewerage System

Location, Length and Sizes of Sewers, with Public and Special Connections

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1935	Special Connections: Character or Location of Connection	Special Connections: Number in Operation
Boston:				Tufts Medical School	1
				Private house	1
Back Bay	6′6″ to 3′9″	1.500[1]	17	Administration Building, Boston Park Department	1
				Simmons College Buildings	1
				Art Museum	2
				Prince District Elementary School	1
				Private building	2
Brighton	7′0″ to 12″	6.405[2]	16	Abattoir	3
				Boston & Albany Railroad yard	2

[1] Includes 0.355 of a mile of sewer purchased from the city of Boston.

[2] Includes 0.446 of a mile of pipe and concrete sewers built for the use of the city of Boston; also 0.026 of a mile of sewer purchased from the town of Watertown.

South Metropolitan Sewerage System — *Concluded*

Location, Length and Sizes of Sewers, with Public and Special Connections — Concluded

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1935	Special Connections	
				Character or Location of Connection	Number in Operation
Dorchester	3′ x 4′ to 2′6″ x 2′7″	2.870[1]	14	Chocolate works	2
				Machine shop	1
				Paper Mill	1
				Private buildings	4
				Edison Electric Company Station	1
Hyde Park	10′7″ x 11′7″ to 30″ pipe	4.543	20	Mattapan Paper Mills	2
				Private buildings	2
Roxbury	6′6″ x 7′ to 4′0″	1.430	–	Fairview Cemetery buildings	1
				– – – –	–
West Roxbury	9′3″ x 10′2″ to 12″	7.643	27	Caledonia Grove buildings	1
				Parental School	1
				Lutheran Evangelical Church	1
				The Whittemore Co.	1
				Private buildings	1
Brookline	6′6″ x 7′0″ to 8″	2.540[2]	14	M. D. C. Sub-station	7
				Private buildings	2
Dedham	4′ x 4′1″ to 2′9″ x 3′	5.012	10	Private buildings	2
				Dedham Carpet Mills	1
Hull[3]	60″ Pipe	0.750	–	– – – –	–
Milton	11′ x 12′ to 8″	7.127	36	Private buildings	4
				Private houses	16
Newton	5′3″ x 5′6″ to 1′3″	2.912	13	Laundry	1
				Metropolitan Water Works blow-off	1
Quincy	11′3″ x 12′6″ to 16″ pipe	8.738	28	Squantum schoolhouse	1
				– – – –	–
Waltham	3′6″ x 4′0″	0.001	1	Private building	2
				Factories	2
Watertown	4′2″ x 4′9″ to 12″	0.750[4]	8	Stanley Motor Carriage Co.	1
				Knights of Pythias building	1
				Walker Gordon Co.	2
Needham	2′0″ x 2′3″ to 2′3″ x 2′6″	4.921	1	Private buildings	7
Wellesley[5]	2′0″ x 2′3″	–	1	– – – –	–
				School house	1
Canton	4′6″ x 5′0″ to 20″	7.243	4	Private buildings	3
Norwood	4′0″ x 4′3″ to 30″ pipe	2.844	3	Bird & Son, Inc.	1
Stoughton[5]	– – – –	–	1	– – – –	–
Walpole[5]	– – – –	–	1	– – – –	–
Braintree	30″ pipe	0.071	1	– – – –	–
Weymouth	4′9″ x 5′0″ to 30″ pipe	1.346	–	– – – –	–
		68.646	216		88

[1] Includes 1.24 miles of sewer purchased from the city of Boston.
[2] Includes 0.158 of a mile of pipe sewer built for the use of the town of Brookline.
[3] Hull is not a part of the Metropolitan Sewerage District.
[4] Includes 0.025 of a mile of sewer purchased from the town of Watertown.
[5] The Metropolitan Sewer extends but a few feet into the towns of Wellesley, Walpole, and Stoughton.

North Metropolitan Sewerage System

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1935)

Cities and Towns	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection [1]	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
							Sq. Miles	Sq. Miles	Per Cent	Per Cent
Boston (Deer Island)	0.70	Separate	–	–	930 [2]	930	–	–	–	–
Winthrop	33.81	Separate	3,896	4.35	16,950	17,030	1.43	1.61	99.5	88.8
Boston (East Boston)	35.96	Separate and combined	5,549	11.20	62,150	64,870	1.27	2.18	95.8	58.3
Chelsea	33.04	Separate and combined	4,865	8.50	41,350	42,010	1.23	2.24	98.4	54.9
Everett	53.46	Separate and combined	6,698	6.90	46,220	46,980	2.15	3.34	98.4	64.4
Malden	81.41	Separate	9,581	5.90	56,530	57,120	3.59	5.07	99.0	70.8
Melrose	51.89	Separate	5,175	4.70	24,320	24,490	2.29	3.73	99.3	61.4
Boston (Charlestown)	22.04	Separate and combined	5,614	5.18	29,080	29,200	0.67	1.27	99.6	52.8
Cambridge	165.17	Separate and combined	19,213	6.17	118,540	119,000	5.18	6.11	99.6	84.8
Somerville	106.78	Separate and combined	17,976	5.55	99,770	100,110	3.68	3.96	99.7	92.9
Medford	97.16	Separate	10,975	5.60	61,460	61,800	4.47	8.35	99.4	53.5
Winchester	43.12	Separate	3,025	4.40	13,310	13,510	2.02	5.95	98.5	33.9
Woburn	28.27	Separate	1,755	5.50	9,650	19,750	1.35	12.71	48.9	10.6
Stoneham	20.74	Separate	1,616	4.70	7,600	11,000	1.04	5.50	69.1	18.9
Arlington	64.56	Separate	6,329	5.60	35,440	39,060	3.02	5.20	90.7	58.1
Belmont	51.26	Separate	3,628	7.00	25,400 [3]	26,280	2.40	4.66	96.7	51.5
Wakefield	27.06	Separate	1,784	4.50	8,030	16,530	1.15	7.65	48.6	15.0
Lexington	17.44	Separate	801	4.30	3,440	11,090	0.97	16.20	31.0	6.0
Revere	54.50	Separate	5,403	6.30	34,040	35,250	2.54	5.86	96.6	43.3
Reading	11.15	Separate	539	4.20	2,260	10,900	0.54	9.82	20.7	5.5
Totals	999 52	– – –	114,422	6.1	696,470	746,910	40.99	111.41	93.2	36.8

[1] Estimated from Assessors' statement of the number of houses in each city or town on December 31, 1935 and the population from census of 1935.
[2] Estimated by Superintendent of the Institution on Deer Island.
[3] Including 2 connections with McLean Hospital, having an estimated population of 803.

South Metropolitan Sewerage System

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1935)

Cities and Towns	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection [1]	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
							Sq. Miles	Sq. Miles	Per Cent	Per Cent
Boston (Back Bay)	27.84	Separate and combined	2,251	22.20	49,970	50,190	1.17	1.61	99.6	72.7
Boston (Brighton)	74.85	Separate and combined	6,024	11.65	70,180	70,360	3.41	3.74	99.7	91.2
Brookline	94.71	Separate and combined	7,423	6.80	50,480	50,910	4.28	6.81	99.2	62.8
Newton	188.17	Separate	13,246	4.95	65,570	66,320	9.41	16.88	98.9	55.7
Watertown	63.56	Separate	6,096	5.80	35,360	36,020	2.95	4.04	98.2	73.0
Waltham	64.89 [6]	Separate	5,380	7.90	42,500 [5]	42,920 [5]	3.62	13.63	99.0	26.6
Boston (Dorchester)	74.00	Separate and combined	8,414	12.50	105,175 [2]	150,140 [2]	2.97	4.89	70.1	60.7
Milton	35.69	Separate and combined	2,817	4.75	13,380 [2]	18,510 [2]	1.55	12.59	72.3	12.3
Boston (Hyde Park)	44.85	Separate	3,475	9.60	33,360	33,620	1.99	4.57	99.2	43.5
Dedham	23.56	Separate	1,494	4.65	6,950	15,420	1.13	9.66	45.1	11.7
Boston (Roxbury) [3]	–	– – –	–	–	–	60,500 [2]	–	1.23	–	–
Boston (West Roxbury)	98.41	Separate and combined	7,904	8.30	65,600 [42]	86,230 [2]	3.86	8.92	76.1	43.3
Quincy	151.87	Separate	13,176	5.85	77,080	77,950	5.82	12.56	98.9	46.3
Wellesley	38.83	Separate	1,737	5.90	8,100	13,790	2.17	9.89	58.7	21.9
Needham	18.55	Separate	696	4.80	3,340	12,040	0.87	12.50	27.7	7.0
Canton	3.11	Separate	275	4.90	1,350	6,650	0.15	17.84	20.3	0.8
Norwood	32.10	Separate	2,141	6.10	13,060	15,680	1.70	10.16	83.3	16.7
Stoughton	–	Separate	–	–	–	8,540	–	16.23	–	–
Walpole	5.79	Separate	53 [7]	4.70	1,515 [7]	7,490	0.18	20.54	20.2	0.9
Braintree	16.23	Separate	167	4.30	720	17,410	0.76	13.44	4.1	5.6
Weymouth	–	Separate	–	–	–	21,930	–	16.46	–	–
Totals	1,057.01	– – –	82,769	7.8	643,690	862,620	47.99	218.19	74.6	22.0

[1] Estimated from Assessors' statement of the number of houses in each city or town on December 31, 1935 and the population from census of 1935.

[2] Parts of Dorchester, Milton, Roxbury and West Roxbury which are situated within the South Metropolitan Sewerage District limits are tributary at present to Boston main drainage works.

[3] At present connected with Boston main drainage system.

[4] Including connection with the Boston State hospital, having an estimated population of 2,873.

[5] Including connections with the Metropolitan State Hospital and the Middlesex County Tuberculosis Hospital, authorized by chapter 372 of the Acts of 1928 and chapter 373 of the Acts of 1929, having an estimated population of 2,078.

[6] Includes 3.65 miles of trunk sewer built by Waltham for the joint use of Waltham, Watertown, Metropolitan State Hospital, and Middlesex County Tuberculosis Hospital, authorized by Chapter 372 of the Acts of 1928 and Chapter 373 of the Acts of 1929.

[7] Includes 4 manufacturing plants.

Both Metropolitan Sewerage Systems

Table showing Areas delivering Sewage to both Systems; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas. Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1935)

Systems	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
							Sq. Miles	Sq. Miles	Per Cent	Per Cent
North Metropolitan . .	999.52	Separate and combined	114,422	6.1	696,470	746,910	40.99	111.41	93.2	36.8
South Metropolitan . .	1,057.01	Separate and combined	82,769	7.8	643,690	862,620	47.99	218.19	74.6	22.0
Totals	2,056.53	– – –	197,191	6.8	1,340,160	1,609,530	88.98	329.60	83.3	27.0

Appendix No. 7

Contracts Made and Pending During

Contracts relating to the

1 Number of Contract	2 Work	3 Number of Bids	Amount of Bid 4 Next to Lowest	Amount of Bid 5 Lowest	6 Contractor
1 73	Furnishing and placing two horizontal tubular boilers at Charlestown Pumping Station, Alford Street, Boston, Mass.	7	$2,498.00	$2,481.00[1]	D. M. Dillon Steam Boiler Works, Inc., Fitchburg, Mass.

[1] Contract based upon this bid.

Contracts relating to the

1 Number of Contract	2 Work	3 Number of Bids	Amount of Bid 4 Next to Lowest	Amount of Bid 5 Lowest	6 Contractor
1 72	Sec. 31, Neponset Valley Relief Sewer, Hyde Park Branch, South Metropolitan System in Milton and Hyde Park, Mass.	8	$11,757.80	$11,489.00[1]	N. Cibotti & Co., Boston, Mass.
2 74	Furnishing and installing, with smoke flue connections, two vertical tubular boilers at the Nut Island Station, Quincy, Mass.	4	5,970.00	5,345.00[1]	D. M. Dillon Steam Boiler Works, Inc., Fitchburg, Mass.

[1] Contract based upon this bid.
[2] Contract completed.

Summary of Contracts

	Value of Work done Dec. 31, 1935
North Metropolitan System, 1 Contract	–
South Metropolitan System, 2 Contracts	$14,128.16
Total of 3 contracts made and pending during the year 1935	$14,128.16

Appendix No. 7

E Year 1935 — Sewerage Division

rth Metropolitan System

7 Date of Contract	8 Date of Completion of Work	9 Prices of Principal Items of Contracts made in 1935	10 Value of Work done Dec. 31, 1935	
t. 31, 1935	–	Lump sum.	–	1
			–	

uth Metropolitan System

7 Date of Contract	8 Date of Completion of Work	9 Prices of Principal Items of Contracts made in 1935	10 Value of Work done Dec. 31, 1935	
pt. 12, 1934	May 31, 1935		$14,128.16	1
ov. 27, 1935	–	Lump sum.	–	2
			$14,128.16	